# ASSESSMENT OF EFFECT OF COMPUTER ASSISTED INSTRUCTION ON PERFORMANCE OF VISUAL ARTS STUDENTS' IN SENIOR SECONDARY SCHOOLS IN KADUNA STATE, NIGERIA

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**A DISSERTATION SUBMITTED TO THE SCHOOL OF POSTGRADUATE STUDIES, AHMADU BELLO UNIVERSITY, ZARIA, IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF MASTER DEGREE IN EDUCATION (CURRICULUM AND INSTRUCTION)**

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## DECLARATION

I hereby declare that the work in the Thesis titled "Effect of Computer Assisted Instruction on Performance of Visual Arts Students' in Senior Secondary Schools in Kaduna State, Nigeria" was performed by me in the Department of Educational Foundations and Curriculum, under the supervision of Dr. A. A. Dada and Dr. A. F. Mohammed. The Information derived from the literature has been duly acknowledged in the text and a list of references provided. No part of this Thesis has been previously presented for another degree or diploma at any institution.

_____ _____

Dayo Yinka OGUNYEMI Date

**CERTIFICATION**

This dissertationtitled “Effect of Computer Assisted Instruction on Performance of Visual Arts Students' in Senior Secondary Schools in Kaduna State, Nigeria”, by OGUNYEMI YINKA DAYO meets the regulations governing of the degree of Masters in Master in Education (Curriculum and Instruction) of the Ahmadu Bello University, and is approved for its contribution to knowledge and literary presentation.

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## DEDICATION

This research is dedicated tomy lovely sister Late Mrs. Folake Olaoye (Nee. Ogunyemi), rest on till we meet to part no more.

**ACKNOWLEDGEMENT**

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## ABSTRACT

This study examined the Effect of Computer Assisted Instruction (CAI) on Students' Performance in Visual Arts in Senior Secondary Schools in Kaduna State, Nigeria. The objectives of the study are to: determine the effect of computer assisted instruction on the performance of students in visual art, ascertain the performance of students taught fundamentals of colours with the use of CAI and conventional method in visual arts, examine the effect of the use of computer assisted instruction CAI and conventional method on the performance of students taught drawing of shapes in visual art and find out the effect of the use of computer assisted instruction CAI and conventional method on the performance of students in identification of textures in senior secondary schools in Kaduna state. Four research questions and four null hypotheses were formulated to guide the study. The hypothesis were tested at $p < 0.05$.Literatures that are related to the study were also reviewed. The study was conducted in the public Senior Secondary Schools in Kaduna State with a population of 106, using quasi-experimentaldesign. The bio-data of the respondents was analysed with the use of frequency and percentage while mean and standard deviation was used to answer the four research questions. All the four null hypotheses were tested at 0.05% level of significance using t-test. A t-test of independent sample was used to compare the performance of students taught using Computer Assisted Instruction (CAI) method with the performance of the group taught using only conventional method.The findings of the study among others revealedthe performance scores of students taught Visual Arts with the use of computer assisted instruction was better compared to those taught using the traditional method of instruction;Students taught fundamentals of colours with computer assisted instruction performed better than students taught using the conventional method;that the performance of experimental group of students was better than the performance of students in controlled group when taught shapes in visual arts and lastly students taught identification of textures with computer assisted instruction performed better than students using the conventional method. The study concluded that students perform better and score higher in Visual when taught using CAI enhanced method. Based on the conclusion, the study recommendedthat the use of CAI method in teaching Visual Arts students should be encouraged and imbibed by teachers of Visual Arts in senior secondary schools in Kaduna State, Teachers should be trained and encouraged to teach students the fundamentals of colours and how to apply it using computers, graphics software's should be made available and handy to teachers and they should be able to utilize this software's to effectively guide students on functions of shape and drawing different types of shapes in art.Lastly, teachers should encourage students to use CAI to source for various types of design textures from the internet and guide the students on how to make use the textures to making meaningful design.

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## ABBREVIATIONS

| | |
|---|---|
| **CAI:** | Computer Assisted Instruction |
| **CI:** | Conventional Instruction |
| **CAL:** | Computer Assisted Learning |
| **CBI:** | Computer Based Instruction |
| **CAI:** | Computer Aided Instruction |
| **IT:** | Information Technology. |

## OPERATIONAL DEFINITION OF TERMS

**Computer Assisted Instruction:** It is an interactive instructional technique whereby a computer is used to present the instructional material and monitor the learning that takes place or it is the use of computer as a tool to facilitate and improve instruction.

**Educational Technology:** The combination of instructional, learning, developmental, managerial, and other technologies as applied to the solution of educational problems.

**Hardware:** The computer equipment used to do the work (i.e., operate Software programs). It consists of the items you can touch, such as the computer case and the peripherals (e.g., monitor, keyboard, mouse) that are attached to the computer.

**Information and Communication Technology:** Technologies such as computers and the Internet which are enabling tools for educational change and reform. ICTs help expand access to education, strengthen the relevance of education to the increasingly digital workplace, and raise educational quality by, among others, helping make teaching easier.

**Instructional Design:** The systematic and reflective process of translating principles of learning and instruction into plans for instructional materials, activities, information resources, and evaluation.

**Instructional Software:** The computer programs that allow students to learn new content, practice using content already learned, and/or be Evaluated on how much they know. These programs allow teachers and students to demonstrate concepts, do simulations, and record and analyze data. Often administrative applications like database programs and spreadsheets are used within the instructional context to help analyze and present information.

**Instructional Technology:** The systemic and systematic application of strategies and techniques derived from behavior and physical sciences concepts and other knowledge to the solution of instructional problems.

**Learner-Centered Classroom:** Students are encouraged to choose their own learning goals and or projects, based on the belief that people have a natural inclination to learn; learn better when they work on authentic tasks; benefit from interacting with diverse groups of people; and learn best when teachers understand and value difference in how each student learns.

**Self-paced Learning:** Education in which the learner is on their own, studying without interaction with others. Sometimes used to refer to asynchronous modes of delivery. CBT has been the most common form of self-

paced learning, but web-based asynchronous systems are catching up quickly.

**Software:** Stored digital information on magnetic disks or tapes or as electronic information in the computer's memory that determines what the computer does. Software can be divided into two groups, operating system software and application software.

**Tutorial:** Refers to activities which include both the presentation of information and its extension into different forms of work, including drill and practice, games and simulation.

**User friendly:** Refers to anything that makes it easier for novices to use a computer. Menu-driven programs, for example, are considered more user-friendly than command-driven systems. Graphical user interfaces (GUIs) are also considered user-friendly. Online help systems are another feature of user-friendly programs.

**Graphic design:** also known as communication design, is the art and practice of planning and projecting ideas and experiences with visual and textual content. The form of the communication can be physical or virtual, and may include images, words, or graphic forms.

**CorelDraw:** It is a vector graphics editor developed and marketed by Corel Corporation. It is also the name of Corel's Graphics Suite, which bundles **CorelDraw** with bitmap-image editor Corel Photo-Paint as well as other graphics-related programs (see below).

# CHAPTER ONE

# INTRODUCTION

## 1.1 Background to the study

Computer technology is the finest and most important gift of science and technology to mankind in recent times. There have been lots of areas touched by the benefits of computer. Computer knowledge can be stated as knowing about the various fundamental aspects of computers and the basic skills involved in the operations of computers. In this present digital era, development in various aspects of computer designed applications has reached a stage that is beyond imagination. Even though computer has a lot of applications in various fields, one should not forget its applications in the field of education. The use of computer in education as a medium of teaching and learning is called computer assisted instructions Ogiegbaen and Iyamu (2015).

According to Seo, Bryant, (2009), CAI is the use of a computer to provide instructional contents. These allows for interaction between user and computer with immediate feedback. There are various programs designed on CAI that adjust for student's ability levels and others limit advancement until skill mastery is achieved. Learning has been proved to be made easy by the utilization of computer in learning. Various countries have taken up the introduction and training of young ones using CAI. It is therefore, heart-warming that Nigeria has formally adopted the teaching and learning of Computer in its educational system. In this direction, students are expected to develop interest and use computers for learning other subjects among other things Nigerian Educational Research and Development Council (NERDC 2014). Additionally, teachers are also expected to teach with computers.

The need for Nigeria to find opportunities hidden in the recent development in technology to cater for the consciousness and training of young ones early; on how to be creative and self-reliant through integration of computer assisted instruction (CAI) in

various subjects such as visual art is indispensable. In as much as The National Policy on Education (FGN, 2013), stipulates that the Senior Secondary School will be both prevocational and academic; which will allow ~~pupils~~students to acquire further knowledge and develop skills. Furthermore the policy also emphasizes both practical and theoretical knowledge, which includes core subjects and electives at the junior and senior secondary schools. There is need for researcher to conduct studies to find out how various skills inherent within the use of technology affects the skills development of ~~pupils~~students in the country and how to bring about creativity to foster the countries development and serve as a panacea to unemployment most especially in vocational and technical subjects which Visual Arts is one of them.

Visual art as a subject consist of fields such as drawing, painting, sculpture, ceramics, textile design, graphics and the likes. According to Lawal (2007), art is a way in which man expresses his feelings, perceptions and thoughts about himself or the world of people and nature. There are seven basic building blocks of making art which are Line, colour, Shape, Form, Font, Space, Texture (Amy, 2017). Artist uses art elements and combines them in different ways to create a unique piece of art. The elements of art are like the ingredients in a recipe. Sometimes artworks contain only one or two elements. Sometimes they have all the elements of art. One thing is certain, there would be absolutely no art without the seven elements of art. (Amy, 2017).

Expressing oneself in visual art requires the utilization of a medium to be able to communicate what you feel to people. With an ever increasing emphasis on still and animated imagery, symbols and iconography in society, evaluation of visual imagery has become just as important as art creation. Furthermore, as the use of digital media has expanded, new career opportunities are opening up for visual artists. Students with knowledge, skills and proficiency in digital art and design are well situated to obtain

employment in commercial visual arts contexts, such as advertising, film, animation and other computer graphic industries. Interestingly, the use of computer assisted instruction (CAI) applications are bringing in creativity and making art works faster with little corrections to make without having to waste to many time.

The importance of Visual Arts to any educational system or society cannot be overemphasized. For decades now, this subject has suffered lack of recognition and low participation. This kind of discussion; is not new, conferences, workshops, and seminars have been organized with the aim of making things right. Efforts made by the Federal Government on reforms in all sectors of the economy have proved abortive. The Federal Government Educational Policy, to include visual Arts as a subject in the school curriculum has failed, it may be, due to lack of proper provision of instructional materials used in secondary schools. This brings us to the sorry state of Visual Arts. In the book, "understanding Art in General Education" written by an art Scholar, Uzoagba in Chukueggu (2010), stated that, "this profession has been extremely neglected in Nigeria and throughout West Africa where its importance is still not recognized".

The performance of a student in a subject could be traced to many factors such as the interest and attitude of the student towards the subject. Students don't even find visual arts as a subject for a better future carrier. They care less about taking visual art exams seriously. Researchers have blamed the performance on lack of facilities and many more. ~~According to~~ Yunusa, Esther and Bello (2015), observed that the poor attitudes and lack of seriousness of student's interest in learning Visual Arts and lack of teaching materials have long been recognized as major causes of poor performance of ~~pupils~~students in visual art exams.

In view of the forgoing discussion, this study sought to determine the effect of CAI on the performance of visual art students in the Senior Secondary Schools in Kaduna state.

The present research intends to investigate whether or not the teaching of Visual Arts subject can be enhanced by the use of CAI at senior secondary School levels in Kaduna State.

**1.2 Statement to the Problem**

As Nigeria incorporates the use of computers in its educational system, it is very necessary and important that the effects of the variety of computer usage are explored. This will help the nation to know and be assured that whatever technology they are introducing will have a positive effect on both students and teachers. It is therefore very necessary, that a study is conducted to examine the effectiveness of computer assisted instruction (CAI) in teaching visual art subject against the traditional approach of teaching. computer assisted instruction (CAI) is new to our present educational system, in view of that little has been done to introduce it to teaching of visual arts in senior secondary schools.

The teaching of visual Arts, as a subject is at the bottom of the list of priorities. The performance of students in visual art is so poor that many researchers blame this on ineffective use of instructional facilities. According to Enamhe and Echeta (2010), this decline of art culture in schools is steadily eroding the subject in secondary schools. Ajibade and Lawson (2014), recorded data of students in some secondary schools in Calabar metropolis, Cross River State, Nigeria in 2002 – 2013, as 16 students out of 219 secondary schools offered visual Arts. In another study by Ajibade, Enamhe and Oloidi, (2011) reported that only a few students are seen offering visual art in secondary schools in Cross River State. This greatly affects admission into the university or tertiary institution to study Visual Arts.

Research are done in the utilization of instructional media to improve learning, but the utilization of instructional computer graphic design applications is not given

much emphasis in the secondary schools, especially, regarding the effective application in visual arts III which is basically the practical aspect of visual art. From the researcher's observation in Kaduna state senior secondary schools, students are unable to carry out simple operations on a computer such as using the computer to make little designs this caught the attention of the researcher. Most of the students who know how to operate computers tend to play more of games than to use it for educational purpose. It should be noted that this games were produced by both graphics designer with the help of a programmer. The researcher became inquisitive on why secondary school student of 21st century are who are meant to be equipped with skills and abilities on the operation of computers are unable to carry to carry out or to handle and operate computer. Therefore, this study will examine the effect of Computer-assisted instruction (CAI) on students' performance in visual arts.

**1.3 Objective of the Study**

Thus the objectives of the study are to:

1. determine the effect of computerassisted instruction on the performance of students in visual art in senior secondary school in Kaduna State.
2. ascertain the performance of students taught fundamentals of colours with the use of CAI and conventional method in visual arts in senior secondary schools in Kaduna state
3. examine the effect of the use of computer assisted instruction CAI and conventional method on the performance of students taught drawing of shapes in visual art in senior secondary schools in Kaduna state
4. find out the effect of the use of computer assisted instruction CAI and conventional method on the performance of students in identification of textures in senior secondary schools in Kaduna state

4.

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## 1.4 Research Questions

The following questions were formulated to guide the study:

1. What is the effect of the utilization of computer assisted instruction on the performance of visual art students in senior secondary schools in Kaduna State?
2. How is the performance of students taught fundamentals of colours with the use of computer-assisted instruction and conventional method in visual arts in senior secondary schools in Kaduna state?
3. To what extent is the effect of the use of computer assisted instruction and conventional method on the performance of students taught shapes in visual art in senior secondary schools in Kaduna state and
4. What is the effect of the use of computer assisted instruction CAI and conventional method on the performance of students in identification of textures in senior secondary schools in Kaduna state?

## 1.5 Hypeses

The following Null hypothesis were postulated for the study:

$H_{01}$ There is no significant difference in the performance of students taught with computer-assisted instruction and those taught with the traditional method in visual art insenior secondary schools in Kaduna State.

$H_{02}$ There is no significant difference in the performance of students taught fundamentals of colours with the use of computer assisted instruction and conventional method in visual arts in senior secondary schools in Kaduna state.

$H_{03}$ There is no significant difference in the effect of the use of computer assisted instruction and conventional method on the performance of students taught

drawing of shapes and forms in visual art in senior secondary schools in Kaduna state.

$H_{04}$ There is no significant difference in the use of computer assisted instruction and conventional method on the performance of students in identification of textures in senior secondary schools in Kaduna state.

### 1.6 Basic Assumptions of the Study

This study was conducted with the assumptions that:

1. Students will perform better when working on a computer than the traditional method in Visual Arts.
2. Students taught fundamentals of colours using computer assisted instruction will perform better than those taught with the conventional method.
3. Students taught drawing of shapes in visual art using computer assisted instruction performed better
4. Performance of students taught fundamentals of textures in senior secondary schools using computer assisted instruction will perform better than those taught using conventional method.

### 1.7 Significance of the Study

This study is going to be of benefit to policy makers, the society, students, academicians, programmers, graphic designers, photographers, publishers, curriculum developers and visual arts teachers.

The study will enlighten policy makers on how to see the possibility of creating employment for youths in areas of graphics designs. With the current situation of the country, policy makers can utilize the research work to develop skills in young ones so that they can be creative in areas related to design, photography and cinematography by

the introduction of the use of computer as instructional materials at early stage of education.

The students will be introduced to various skills in computer designs that will benefit the students and reduce idleness. Students would be introduced to the application of use of computers to produce various illustrations and develop, identify rudiments of colours, shapes, textures and lines easily, do a wide range of research on their own, minimize mistakes, compete with their peers globally and earn some money for themselves by designing of cards, banners, engaging photography and many more.

The society will be equipped with students who have skills in various areas in graphic design. This would not only reduce crime but add to the development of the society at large. There would be employment opportunities for the youths and this would make them stay away from committing crimes that would disrupt the peace of the community.

Researchers would be able to get plethora of information's when conducting research and be able to find new areas for further research work. This work will expose some hidden advantages of CAI in the field of art.

For visual art teachers this study would serve as an avenue or source of information which would give them new ideas in their field. This work would encourage teachers to improve on their skills and make them source for better means of teaching the students so that they also can contribute to the development of the country.

Programmers will be encouraged to develop applications that will allow for easy teaching and learning process in visual art. This work would give inspirations to programmers on insights of applications that can be used for designs which would definitely contribute to the nation's development.

Graphic designers would be encouraged to do better in the work their work. They would be motivated to contribute to development of the young ones through training and workshops. Photography is another wide range in visual art because it integrates itself with the use of computers. Photographers would be tasked in finding better ways of developing new models to create jobs for the teaming youths. The photographers would also have means to showcase what they have and contribute to the development of the country through the research work.

Publishers will have high standard and genuine work to publish to add and enrichthe knowledge of some people around the country and world. ~~, publishers will also have var00ious to write by getting information from the research work.~~ Curriculum developers would be able to bring in new ideas into the educational system. Since education is dynamic and curriculum is not static, this work would create good information that would be of help to complement the existing information's in the curriculum

### 1.8 Scope of the Study

The study was carried out to determine the effect of CAI on the performance of visual art students in senior secondary schools in Kaduna state. Specifically, the Visual Arts students of SSII in Demonstration Secondary School Samaru Zaria, Zaria Academy Shika, Model Learning Secondary School Samaru, Zaria and Government Day Secondary School Bassawa. The study was carried out in these schools because of the nature of the research which requires the availability of computers. However the study was delimited to Visual Art III which is basically practical in graphics design. The study was carried using graphics software specifically (CorelDraw 15 and Photoshop Cs3) which is user friendly.

# CHAPTER TWO

# REVIEW OF RELATED LITERATURE

## 2.1 Introduction

This research work sort to find out the effect of Computer assisted instruction (CAI) on the performance of visual arts students' in Senior Secondary Schools in Kaduna State. Computer assisted instruction (CAI) refer to instruction or remediation presented on a computer. It is the use of computers as acollaborating instructional technique whereby a computer is used to present the instructional materials and monitor the learning that takes place. Computer-assisted instruction can be a great asset to the classroom and curriculum as long as they are not overused (Alasoluyi, 2015). Too much of any mode of teaching can lead to boredom and frustration in the students. This chapter will review related literature on various ways computers can be of great effect to interest, attitude and performance in education. Thus the review will be presented under the following sub headings: Theoretical Framework, Conceptual framework: conceptualising of computer, Nature of Computer Assisted Instruction, Categories of Computer-Assisted Instruction, Mechanism of CAI Drill and Practice, characteristics of computer-assisted instruction, concept of visual art, importance of visual art, effect of computer assisted instruction on the performance of students in visual art in secondary schools, Computer

Assisted Instruction and Senior Secondary School Male and Female, Students' Performance in visual art, Visions into the future by of visual art, Types of Technology and their Educational Applications, Obstacles to the use of CAI in Nigerian Schools, Empirical Studies, and Summary.

**2.2 Theoretical Framework**

The theoretical framework of this study was built on the Engagement theory.~~,~~This theory is relevant with application of technology to development of skills and knowledge of learners to bring about productivity and creativity. This was first propounded byKearsley and Shneiderman (1999), stating that:Engagement theory is a schema for building learning activities that evoke engaged learning. Engaged learning occurs when active cognitive processes, such as problem-solving, decision-making and evaluating, are involved. Engagement theory's focus on the learner as constructor allies with those in the Constructivist domain; and by championing experiential learning and self-direction.

The fundamental idea underlying engagement theory is that students must be meaningfully engaged in learning activities through interaction with others and worthwhile tasks. While in principle, such engagement could occur with the use of technology, we believe that technology can facilitate engagement in ways which are difficult to achieve otherwise. So engagement theory is intended to be a framework for technology-based learningand teaching. Kearsley and Shneiderman (1999), asserted that: Although not directly derived from other theoretical frameworks for learning, it has much in common with many such frameworks. For example, with its emphasis on meaningful learning, it is very consistent with constructivist approaches. Because it emphasizes collaboration among peers and a community of learners, it can be aligned with situated learning theories. Because it~~s~~ focuses on experiential and self-directed learning, it is similar in nature to theories of adult learning.

By engaged learning, we mean that all students activities involve active cognitive processes such as creating, problem-solving, reasoning, decision-making, and evaluation. In addition, students are intrinsically motivated to learn due to the meaningful nature of the learning environment and activities. Engagement theory is based upon the idea of creating successful collaborative teams that work on ambitious projects that are meaningful to someone outside the classroom.

The three components, of the engagement theory according to Kearsley and Shneiderman (1999) as summarized by Relate-Create-Donate, imply that learning activities: occur in a group context (that is, collaborative teams); are project-based; have an outside (authentic) focus.The first principle (the "Relate" component) emphasizes team efforts that involve communication, planning, management and social skills. The modern workplace demands proficiency in these skills, yet historically students haves been taught to work and learn on their own. Research on collaborative learning suggests that in the process of collaboration, students are forced to clarify and verbalize their problems, thereby facilitating solutions. Collaboration also increases the motivation of students to learn, a significant consideration in settings with high drop-out rates (for example, teen-agers, distance learners). Furthermore, when students work in teams, they often have the opportunity to work with others from quite different backgrounds and this facilitates an understanding of diversity and multiple perspectives. He explained the second principle (the "Create" component) which makes learning a creative, purposeful activity. Students have to define the project (problem domain) and focus their efforts on application of ideas to a specific context. Conducting their own projects is much more interesting to students than answering sterile textbook problems. And because they get to define the nature of the project (even if they don't choose the topic), they have a sense of control over their learning which is absent in traditional classroom instruction. According

to Barrows and Tamblyn (2012), project orientation is the essence of Problem-Based Learning (PBL) approaches which are often used in medical and other types of professional education.

The third principle (the "Donate" component) stresses the value of making a useful contribution while learning. Ideally each project has an outside "customer" that the project is being conducted for. The customer could be a campus group, community organization, school, church, library, museum, government agency, local business, or needy individual. In many cases, the projects can be work-related, that is, an activity that fits into a team's occupational or career interests. The authentic learning context of the project increases student motivation and satisfaction. This principles is consistent with the emphasis on school-to-work programs in many schools systems and colleges, as well as the "service" philosophy of contemporary corporate training efforts.

This study is mainly geared towards the application of technology in teaching and as such the engagement theory is very relevant to this study in the sense that students will be engaged in learning practical skills and also will be engaged in worthwhile tasks which are some of the core values of the engagement theoryBarrows and Tamblyn (2012),The theory aligns to the application of technology to development of skills and knowledge of learners to bring about productivity and creativity. Engagement theoryis~~has~~ a little different from other older models of computer-based learning because emphasis was on individualized instruction and interactivity. Engagement theory does not just promote interaction, but human interaction in the context of group activities, and individual interaction with an instructional program. The latter form of interaction tended to be measured by single responses (for instance, key presses or mouse clicks) whereas engagement requires assessment of larger units of work (for example; reports, programs,

user satisfaction). The difference between engagement and interactivity reflects the shift in thinking about computers in education as communication tools rather than some form of media delivery devices. Engagement theory places a great deal of emphasis on providing an authentic (that is, meaningful) setting for learning, something that is not present in previous models(Adekomi, 2012).

**2.3 Conceptual Framework**

A computer is a programmable machine that allows the user to store all sorts of information and then 'process' the information, or data, or carry out actions with the information, such as calculating numbers or organising words.The computer is a technological innovation under the control of stored programme that can perform some of the intellectual roles of man even beyond human capability. It is a power-driven machine equipped with keyboards, electronic circuits, storage compartments, and recording devices for the high speed performance of operations. Liaw (2008) defines computer as an electronic device which stores information on disc or magnetic tape; analyses it and produces information required from the data on the tape. Sharing the same view with Liaw (2008), Kingsley (2014) sees computer as a device that accepts data in one form and processes it to produce data in another form. Adekomi (2012) defines computer as a combination of related devices capable of solving problems by accepting data, performing described operations on the data, and supplying the results of these operations. Hence, computer could be said to be a man-made machine made up of electronic components that operates information at a very high speed to produce results that are meaningful to the user.

According to Kingsley (2014), computer is a machine designed to make life easier due to its speed, accuracy, ability to store large quantity of information and to carry out long and complex operation without human intervention. Computers,

irrespective of type and size have five basic parts namely, Input Unit, Memory Units, Control Units (CU), Arithmetic and Logic Units (ALU) and Output Units. Both ALU and CU are joined into one piece of hardware known as the Central Processing Unit (CPU) which is the brain of the computer. According to Adekomi (2012), the primary functions of computers are: Imputing and storing information, processing information and out-putting information. Innovations appearing today indicate that the world is dependent on computer technology (Ajibade, 2012). The computer is not only a game or word processing and accounting alone, it is a great learning tool for adults and little ones, nursery school ~~pupils~~students and secondary school students, graduates and post graduate students.

Computer as instructional material has made a significant contribution to a wide range of group-learning activities. They can, for example, be used to manage or structure a group-learning process, by guiding the group through a simulation exercise of some sort. This can provide a vehicle through or with which a group of learners interact, and gain access to information, investigate simulated situation, which can lead to creativity indeed, ~~virtual~~virtually all these are ways in which computers can be used to determine ~~pupils~~students interest in learning. It can also be used in group-learning situations. Learners in groups thus, do not only benefit from feedback they receive from the computer, but also from the feedback they receive from one another when considering the views of Izzet and Ozkan (2011)

### 2.3.1 Concept of Computer Assisted Instruction.

The use of computers as an educational tool has continued to grow rapidly as a new way to teach. Computer-assisted instruction (CAI) is an instructional method that has been developing for over 40 years (Liaw, 2008). This idiom equates with other modern terms such as computer-based instruction (CBI) (Hannafin and Foshay, 2016),

computer-based learning environment (CBLE), or computer-aided learning (CAL) (Santally, Boojawon, & Senteni, 2014). CAI, "defined as the use of a computer to provide instructional contents" (Seo & Bryant, 2009), allows for interaction between user and computer with immediate feedback. Some CAI programs adjust for student's ability levels and others limit advancement until skill mastery is achieved. Instruction may involve using stand-alone software or more advanced applications that deliver an entire course. Some situations involve a blended model, incorporating face-to-face instruction, referred to as teacher directed, and CAI (Graham, 2015). Regardless of delivery method, CAI is a means to mesh technology and learning.

Computer assisted instruction (CAI) refer to instruction or remediation presented on a computer. It is the use computers as an interactive instructional technique whereby a computer is used to present the instructional materials and monitor the learning that take place. It is assisted learning because it allows the learner to interact with instructional techniques whereby a computer is used to present the instruction and monitor the learning that takes place. It uses a combination of text, graphics (animation), sound and video in the learning process. More specially, computer programs are interactive and can illustrate a concept through attractive animation, sound and demonstration. They allow students to progress at their own pace and work individually or problem solving in a group. Computer aided instruction has been found to enhance students' performance than the conventional instructional methods in education (Karper, Robinson, Casado-Kehoe 2012). Many research studies abound that, investigated the efficacy of computer assisted instruction (CAI) using different variables differen~~t~~t~~ee~~ groups of students, difference in ability levels, gender among others.

Nicole and Anderson (2008) CAI provides ~~pupils~~students with extended practice, which, in turn, can lead to acquisition of basic skills and encourage better learning of

~~pupils~~students in school. This may be due to the fact that a good amount or personal skills can be developed by the learners themselves when given the opportunity, unlike during the traditional classroom learning where the main source of feedback is the teacher. Therefore, to achieve this, activities should include intellectually challenging task that should motivate ~~pupils~~students to explore solution to a problem, and give them an opportunity to gain a sense of individual control and mastery over an environment (Becker, 2009).

The use of computers in education is still in its infancy. However, the computer is bringing some exciting innovations to education.The following are the areas in which computers are helping the educators: Computers take over ~~the~~ most of the drudgery of schooling like classifying children according to abilities, preparing timetable, schedules, and so on, Computers allocate learning resources to individuals and groups, Computers maintain progress cards and preserve them confidentially, They provide easy access to files of information for reference and guidance~~.~~. They provide direct interaction between student and the subject-matter to be learned, and ~~They~~they engage the students in tutorial interaction and dialogue.

The most exciting innovation in ~~the~~ educational technology is Computer-Assisted Instruction (CAI). Though it is still in the experimental stage in Nigeria, the day is not far off when it will revolutionize the whole process of instruction. Before discussing in some detail computer-assisted instruction or CAI, which appeals most to the teacher practitioner, it is relevant to refer to two other modes of computer-based instruction. One is Computer-managed instruction and another is computer-based instructional simulation. Each of these techniques makes use of the computer in a different role in instruction. In computer-managed instruction, the role of the computer is mainly record keeping and it does not prove any direct instruction to the learner.

This type of instruction helps to assess the learner's present level of knowledge, weaknesses or gaps in his learning and remedial action possible. Whereas computer-assisted instruction is directly involved in tutorial work, drill and practice, and is of greater help in instruction. In the use of CAI, different programmes, one for new instruction and another for drill and practice may be needed. The third type computer-based instruction simulation (CBIS) is the most powerful application of computers in instruction as it provides realistic substitutes for real life experiences that might be otherwise impractical, time-consuming or even dangerous. CBIS creates a model situation, which imitates some aspects of reality and the simulation model may be static or dynamic, in which conditions are changed as a result of feedback of pupil's actions and responses (Sampath et al, in Alasoluyi, 2015).

### 2.3.2 Categories of Computer-Assisted Instruction

Computer assisted instruction are grouped into various categories and this includes drill and practice, tutorials, tools software, problem solving, and simulations, this has become known in the United States as computer-assisted instruction (CAI), computer-based instruction (CBI), or computer-based education (CBE). In Europe and elsewhere, these activities are usually referred to as computer-assisted learning (CAL). According to Aremu, Sokan, Osei, and Mensah (2012) various categories of CAI includes:

**Drill and Practice**: (Math Munchers, Reader Rabbit, Spellavator Plus, Accelerated Reader)

i. Drill and practice software is generally used the same way that worksheets or flash cards are used in classrooms. It provides repeated exposure to facts or information, often in a question or game-type format.

ii. Drill and practice software was the most prevalent type of computer application for many years, since teachers were not quite sure how else computers could be used. Drill and practice software also fit nicely into a behavioural approach to teaching and learning since it measured student performance.

Most drill and practice programs also have a tracking device so that students (and teachers) are aware of their progress. In addition, many of the drill and practice programs have sounds and other motivating characteristics that encourage students. Students can progress at their own rate while using the software, another advantage.

**Tutorial**: (Mavis Beacon Teaches Typing, Type to Learn, Reader Rabbit's Learn to Read)

i. Tutorial software presents concepts or skills and then gives students the opportunity to practice them. Drill and practice software does not include a teaching component.

ii. Tutorials may be linear (students must go from p. 1 to page 2 and so on) or non-linear (where they can branch off in one of several directions based on interest or need). Older software is more likely to be linear in nature.

**Problem Solving:** (Carmen San Diego, the Factory, National Inspirer, Thinking' Things, Shape Up)

**i.** Problem solving software allows learners to see the results of their reactions to various events. Learners manipulate variables, and feedback is provided based on these manipulations.

ii. Problem solving software does not necessarily utilize realistic scenarios. For example, in the Carmen SanDiego series, the student flies around the world getting clues to try to track down a criminal. The process is contrived, although students develop problem solving skills and learn geography at the same time.

**Simulation:** (Hot Dog Stand, Oregon Trail, Virtual Labs-Electricity)

i. A simulation is a representation or model of a real event, object, or phenomenon where learners can see the results of their actions. Sometimes it is not practical or feasible to do the real thing, so a simulation is used to provide experiences that otherwise would be denied. The difference between simulation software and problem solving software is that simulation software deals with realistic situations.

ii. This is a very powerful application of computers and the educational community can capitalize on this type of software. Students are given the power to manipulate aspects of models or situations. They see the results of their decisions immediately.

**Tool Software**:(Inspiration, Neighbourhood MapMachine, PrintShop, Grolier's Encyclopaedia)

**i**. Tool software is the most prevalent computer application used in education right now. It encompasses all software that can be used as a tool for student learning. The software itself is not the focus, but rather the student is using it to help them express their thoughts and show their understanding. As a result, tool software is not tied to a specific grade or content area. Tool software helps students and teachers to manage information. The use of tool software in the curriculum is only as effective as the activity that the teacher develops.

ii. Word processors, desktop publishing packages, spreadsheets, data bases, graphics programs, telecommunications software, and multimedia software are samples of tool software.

iii. Tool-based programs contain tools and features to do work in a digital environment. While functional tasks can be performed with tool-based software, the programs Core Learning offers also help students acquire practical computer

skills as well as developing skills in particular subject areas. Embedded with activities and digital resource libraries, these same tool-based programs can be used by teachers as instructional software for in-class presentations. All Core Learning tool-based software programs were designed for classroom use with interactive whiteboards or with a projector and screen.

Art and creativity software programs enable creation of realistic digital art creation, animations and digital editing, including photo editing. Music software enables composition of music and develops musical appreciation. Since software programs provide tools for creating computer models and running science experiments as computer simulations, core learning currently offers nine tool-bases software program.

**Computer Programming**: (Logo, BASIC, Pascal)

i. This used to be a big category of computer use in the schools, but the emphasis on programming skills has decreased significantly. Many schools no longer even offer programming classes, but instead are teaching students to use multimedia and other computer tools.

ii. Logo is still taught, especially for its value in helping students understand mathematics. It is a programming language that is not used outside of education.

### 2.3.3 Characteristics of Computer-Assisted Instruction

A computer is programmed with linear or branching programmes. It acts like a super teaching machine catering to the needs of a number of students at the same time. The characteristic aspect of CAI is its capacity to initiate flexible interactions with the students that is not possible in traditional teaching method. There are a number of ways in which this can be brought about. The computer is able to record and store all the responses of all the students. It can use the information in deciding what information to

give the student next. It can branch not just in terms of one answer but also in terms of a whole series of previous answers. It can also record the time taken to answer a question and the degree of correctness of the student's response. It uses the information in planning to determine which branch to take (Sampath, Panneerselvam and Santhanam, 2012).

The CAI starts by identifying the way a student seems to learn best. It reviews his past history of learning and then presents a programme built on his strength. Sometimes the computer stores all the information gained from all students who have taken the computer course previously. This information may be re-analysed and much of the teaching strategies, which were not effective, may be rejected and strategies which have succeeded may be continued (Sampath, Panneerselvam and Santhanam, 2012). Computer-assisted instruction makes use of multimedia software in the learning process including text, video technology, graphics, sound and Internet technology. Computer-assisted instruction is heavily used in the growing field of distance education. Traditionally, computer-assisted instruction, like programmed instruction, has been linear in nature. Web-based instruction on the other hand is nonlinear (Lawson, 2009). In a society where most work is becoming computer-based, school work cannot forever resist the change. Computer technology and electronic networks have slowly been infiltrating the schools. Henry (2014),says because of the widespread and growing use of such technology in both the home and the workplace, computer equipment is unlikely to end up in closets or even to sit idle most of the time. Hence, for both students and teachers, there is a kind of "authenticity" associated with using this equipment; for students, the technology represents the future.According to Allan (2014), there are a minimum of twelve major trends that can be identified as characteristics of Computer-Assisted Instruction and they are:

**Shift from whole-class to small-group instruction:**When teachers use computers, one or two students are normally assigned to each computer. Teachers do not find it feasible to maintain all the students in lockstep, and so they move to an individualized model of teaching. This shift means that teachers begin to talk to individual students and to develop an idea of how much students understand and what their confusions are. Usually teachers have an inflated idea of how much their students understand, so watching individual students' struggle with problems may give teachers a more realistic picture of their students.

**Shift from lecture and recitation to coaching**: As part of the shift from whole-class to individualized instruction,there is a shift from didactic approaches to a constructivist approach. Much of the learning is meant to take place between the student and the computer, so the teacher becomes an observer and a guide who ensures that thoseinteractions are beneficial to the students' learning.

**Shift from working with better students to working with weaker students**. In whole-class instruction, teacherscarry on a dialogue with their better students. This is because it is the better students who raise their hands to offerideas. Teachers do not like to call on weaker students, because they do not want to "embarrass them in front of theclass." In a classroom in which students are working on computers, the teacher is naturally drawn to students whoneed help, and those students are generally the weaker ones.

**Shift toward more engaged students**. In settings in which computers have been put at the disposal of students as part of some long-term activity or project, researchers have reported dramatic increases in students' engagement. For example students who are so bored with their classes that they sleep through them are eagerly engaged in a project to construct a HyperCard museum exhibit about their city. (Cuban, Kirkpatrick, and Peck. (2010). Computer supports long-term effort rather than short exercises, there is

suggestive evidence that students become invested in the activities they carry out on computers.

**Shift from assessment based on test performance to assessment based on products, progress, and effort**. Assessment in most classes is based on students' performance on tests that are given after different sections of thecurriculum have been completed. The introduction of computer technology and the shift to individualized instructionmove assessment away from the classroom test, which seems inappropriate to teachers under the circumstances.Thus the teacher moved toward assessing students in terms of the effortand progress they made.

**Shift from a competitive to a cooperative social structure.**In the normal classroom, students work individually and compete against one another for grades, except when students drop out of the competition because of social pressures or repeated failure.

**Shift from all students learning the same things to different students learning different things**. An underlying assumption of the education system is that every student must acquire certain basic knowledge and skills. This assumption leads to failing students who haven't mastered parts of the curriculum and directing students' efforts toward their weaknesses rather than their strengths. Electronic networks and shared databases foster a different view of knowledge in which expertise is spread among different participants and brought together in a common space. The National Geographic Kids' Network, which enables students all over the country to collect scientific data and to exchange ideas with one another and with working scientists, is an embodiment of this idea of distributed knowledge.

**Shift from the primacy of verbal thinking to the integration of visual and verbal thinking**. The invention of the book took society from concrete, situated thinking to abstract, logical thinking. The visual media - television, film, and computers - have

begun to bring about a new kind of visual thinking, and a number of educators are exploring how to use visual media to enhance learning. Computers and electronic networks potentially provide instant access to the world's accumulated knowledge, in both verbal and visual forms. This development may slowly undermine the primacy of the book, the lecture, and their accessory, such as the multiple-choice test and the recitation class.

**2.4 Concept of Academic Performance**

In educational institutions, success is measured by academic performance, or how well students deal with their studies; how they cope with or accomplish different tasks given to them (Ankomah, 2012). As an outcome of education, academic performance refers to the capacity to achieve when one is tested on what one has been taught (Otoo, 2007), which relates to curriculum content, the learner's intellect, and hence depends on the learner's competence. Also referred to as academic achievement or scholastic functioning, academic performance of students, especially at the secondary school level, is not only a pointer to the effectiveness or otherwise of schools but to them by their teacher, and the extent to which a student, teacher, or institution has achieved their educational goals which is the major determinant of the future of youths in particular and nations in general (Aremu and Sokan, Osei and Mensah, 2012).

Performance in school is evaluated in a number of ways, including examinations as a factor of quality education, Yeboah, (2014). Academic performance is measured in terms of examination marks, the grading of which concerns the ability of individuals to use the knowledge and skills acquired. For regular grading, students demonstrate their knowledge by taking written and oral tests, performing presentations, turning in homework, and participating in class activities and discussions. Performance results are shown in the form of letter or number grades and side notes that describe how well a

student has done, which also allows students to be ranked and sorted on a scale that is numerically obvious, and also as a means of holding teachers and schools accountable for the components of each and every grade (Becker, 2012). Students are also evaluated by their performance on standardized tests geared toward specific ages and based on a set of achievement objectives that students in each group are expected to meet. In the past, academic performance was often measured more by year than today, and teachers' observations made up the bulk of the assessment; today's summation or numerical method of determining how well a student is performing is a fairly recent invention (Becker, 2012).Extensive past studies suggest that there is a close relationship between students' attitudes towards academic subject and their overall achievement (Dinardo, 2008). Literature review on this area reveals that there are two main contributing factors to students' academic achievement that are psychological and sociological factors. Psychological factors refer to the internal elements of individual including emotional and cognitive domains, whereas sociological factors refer to external factors such as socio-environment and friendship. However, both factors are inter-related and dependable.

Most past studiestended to discuss the subject in a specific context. For instance, a study of academic achievement carried out by Ankomah (2007), focused on individual's learning style and how it affects his/her academic achievement. Although learning style has a close link with a person's personality and intellectual capabilities, the selection of learning styles is also influenced by environmental factors such as educational support provided by peers and teachers. Although previous studies found that there is a positive relationship between students' interest in academic subject and its performance, classroom environment and their existing knowledge on the particular subjects also play major roles. According to Popham (2015), students' attitudes or interests should be enormously important to educators, because affective dispositions are

powerful predictors of students' subsequent behaviour. In a related study. Mavondo and Kalbers, (2013) found that there is a positive relationship between students' attitudes towards modern learning technologies and their academic achievement. Academic achievement increases with the use of modern technologies positively.

There is a strong association between individuals' attitudes towards education and their academic performance and commitment. Students who have negative attitudes towards education activities are found to exhibit challenging behaviour including anti-social and off-task behaviour. Liaw(2011), found that streaming in education has a close relationship with students' academic achievement.

**2.5 Concept of visual art**

Art is as old as man on earth and the method of transmitting its knowledge was through apprenticeship method of teaching. According to Chukuegu (2010), the formal teaching of Arts and Crafts in Nigerian schools began about 1923 when Aina Onabolu started his teaching career in Lagos. Before then, traditional arts and crafts were practiced for decades because of their contribution to the social and cultural life of the society. Eisner and Olorukooba (2012), point to the important role of Arts and Crafts as means of communication and source of disseminating information in a society. They also assist learners in developing the ability to make self-evaluation as well as train learners who want to become professional artists; (NPE, 2014).

Despite the neglect suffered by art in our education systems, its contribution to the educational development of an individual is immense and not an issue of debate. There is no doubt that art can make substantial contributions to students learning. Arts are veritable tools for expressing ideas, concepts and feelings and a vehicle of communicating with others. Graphic design which is one of the branches in Fine Arts has often been referred to as visual communication design. One area where the knowledge

from graphic design is very useful is in classroom communication. The process of learning in any subject area most often requires visuals and illustrations to enhance communication of the message (Enamhe and Echeta, 2010) so as to enable learners to concretize abstract concepts thereby enabling retention of concepts so learned. A study carried out by Ajibade, Enamhe, and Oloidi (2011), shows that visuals used in the teaching of student led to a significantly better achievement than teaching conducted without visuals. Teaching and learning is a complex process that can be enhanced and reinforced with visuals and illustrations which stimulates, motivates and at the same time arrest learners' interest. According to Andrew (2008), fine art is highly correlated to other school subjects in that it influences their successful teaching through the creation of graphic illustrations. Art education can be said to be at the heart of development of visual literacy which is one of the literacies required for individuals to function effectively in the 21st century society. Art has a very crucial role to play in preparing students as visually literate and critical members of the society. (Brown, 2016). It develops in the learner, the necessary imaginative, intellectual, theoretical and practical skills and competencies for continued personal and professional development (Ajibade, Enamhe & Oloidi, 2011). Art instructions if carried out appropriately enables the learners to be creative and critical thinkers thereby making them to become self-confident, self-governing and contributing members of the society who can articulate and solve problems in many ways.

There have been series of argument on the difference between art and design. The subject of what separates art and design is convoluted and has been debated for a long time. Artists and designers both create visual compositions using a shared knowledge base, but their reasons for doing so are entirely different. Some designers consider themselves artists, but few artists consider themselves designers. So what exactly is the

difference between art and design? According to Nana, Akosua, and Harry (2015), the most fundamental difference between art and design that we can all agree on is their purposes. He went further to state that:

**Good art inspires, Good design motivates**

Typically, the process of creating a work of art starts with nothing, a blank canvas. A work of art stems from a view or opinion or feeling that the artist holds within him or herself. They create the art to share that feeling with others, to allow the viewers to relate to it, learn from it or be inspired by it. The most renowned (and successful) works of art today are those that establish the strongest emotional bond between the artist and their audience.By contrast, when a designer sets out to create a new piece, they almost always have a fixed starting point, whether a message, an image, an idea or an action. The designer's job isn't to invent something new, but to communicate something that already exists, for a purpose. That purpose is almost always to motivate the audience to do something: buy a product, use a service, visit a location, and learn certain information. The most successful designs are those that most effectively communicate their message and motivate their consumers to carry out a task. Nana, Akosua, and Harry (2015)

**Good art is interpreted. Good design is understood**

Another difference between art and design is how the messages of each are interpreted by their respective audiences. Although an artist sets out to convey a viewpoint or emotion that is not to say that the viewpoint or emotion has a single meaning. Art connects with people in different ways, because it's interpreted differently. Da Vinci's Mona Lisa has been interpreted and discussed for many years. Just why is she smiling? Scientists say it's an illusion created by your peripheral vision. Romantics say

she is in love. Sceptics say there is no reason. None of them are wrong.Design is the very opposite. Many will say that if a design can be “interpreted” at all, it has failed in its purpose. The fundamental purpose of design is to communicate a message and motivate the viewer to do something. If your design communicates a message other than the one you intended, and your viewer goes and does something based on that other message, then it has not met its requirement. With a good piece of design, the designer’s exact message is understood by the viewer. Nana, Akosua, and Harry (2015)

**Good art is a taste. Good design is an opinion.**

Art is judged by opinion, and opinion is governed by taste. To a forward-thinking modern art enthusiast, Tracey Emin’s piece “My Bed”, which was shortlisted for the Turner Prize in 1999, may be the twelve of artistic expression. To a follower of more traditional art, it may be an insult to the medium. This goes back to our point about interpretation, but taste is more about people’s particular likes and dislikes rather than the message they take away from a piece.Design has an element of taste, but the difference between good and bad design is largely a matter of opinion. A good piece of design can still be successful without being to your taste. If it accomplishes its objective of being understood and motivates people to do something, then whether it’s good or not is a matter of opinion. We could go on discussing this particular point, but hopefully the underlying principle is clear. Nana, Akosua, and Harry (2015).

**Good art is a talent. Good design is a skill.**

More often than not, an artist has natural ability. Of course, from a young age, the artist grows up drawing, painting, sculpting and developing their abilities. But the true value of an artist is in the talent (or natural ability) they are born with. There is some overlap here: good artists certainly have skill, but artistic skill without talent is, arguably, worthless.Design, though, is really a skill that is taught and learned. You do not have to

be a great artist to be a great designer; you just have to be able to achieve the objectives of design. Some of the most respected designers in the world are best known for their minimalist styles. They don't use much colour or texture, but they pay great attention to size, positioning, and spacing, all of which can be learned without innate talent. Nana, Akosua, and Harry (2015).

**Good art sends a different message to everyone. Good design sends the same message to everyone.**

Many designers consider themselves artists because they create something visually attractive, something they would be proud for people to hang on a wall and admire.But a visual composition intended to accomplish a specific task or communicate a particular message, no matter how beautiful, is not art. It is a form of communication, simply a window to the message it contains.Few artists call themselves designers because they seem to better understand the difference. Artists do not create their work to sell a product or promote a service. They create it solely as a means of self-expression, so that it can be viewed and appreciated by others. The message, if we can even call it that, is not a fact but a feeling. Nana, Akosua, and Harry (2015).

### 2.5.1 Visual Arts curriculum

Following the introduction of art in the curriculum of Nigeria educational system in 1922, the National policy on education recognizes the subject as one of the subjects to be taught at primary, secondary and tertiary levels of her educational system (FRN, 2013). In the primary school curriculum, Fine art is subsumed in Cultural and creative arts. The document prescribed that instruction shall be carried out using practical, exploratory and experimental methods. At the secondary level, it is grouped as pre-vocational electives along other subjects like Agriculture, Business Studies, Home

Economics, Local crafts and Computer education with emphasis on practice rather than theory (FRN, 2014). The policy gave freedom to institutions at the tertiary level to decide what subjects to teach, a decision that must be guided by national goals. From the foregoing, fine art teaching methods should be more of exploratory, practical and experimental without excluding other methods that have theoretical backing to help learners to create knowledge. The society and indeed the schools place so much premiums on literacy and numeracy giving little or no time for arts.Hence in most schools art is rarely found in the school timetable(Tijani, 2014). This has painted an ugly picture that scares away talented young men and women from art related careers.

The objectives of inclusion of fine and applied arts in school curriculum at all levels of education are numerous. However the national policy on education identified two major objectives which art teaching should meet. They are: instruction should be geared towards the production of self-reliant, resourceful, creative people; people with initiative and understanding for the need to create; people with a positive identity in the community; the development of aesthetic awareness in the general public with regard to the products of industry and the environment (FRN, 2013). The level of unemployment in the nation is such that the youth are continually encouraged to study courses that can guarantee them self-employment on graduation rather than wait on government for non-existent jobs. Fine and applied arts aptly fits into the frame of reference of such courses especially if the prescribe teaching modes are followed in its teaching. Every individual that passes through art experiences is not expected to practice art however going through art experiences no doubt will engender the development of aesthetic awareness in the generality of the citizenry for a better environmental consciousness and awareness. Such individuals are equipped with valuable tools to make informed decisions concerning aesthetic matters.

All art, whether two-dimensional like a painting or three-dimensional like a sculpture, contains one or more of the seven elements of art. These elements are: Line, colour, Shape, Form, Value, Space, and Texture. They are the basic building blocks of making art.So how exactly does an artist use the elements? Working as an artist and creating an artwork is similar to being a chef and cooking a meal. The chef uses a list of ingredients combined together in certain amounts to produce a unique recipe. The artist uses art elements and combines them in different ways to create a unique piece of art. The elements of art are like the ingredients in a recipe. Sometimes artworks contain only one or two elements. Sometimes they have all the elements of art. One thing is certain, however, ~~.There~~there would be absolutely no art without the seven elements of art. Amy, (2014). These~~is~~ elements are:

**Line**

When an artist decided to create a drawing using a pencil on a white piece of paper, ~~.~~he might use the pencil to create the drawing using lines. A line is an element of art. It is a mark made upon a surface. In order to be a line, the mark's length must be longer than its width. There are many different types of lines, including horizontal, vertical, wavy, diagonal, and more Amy, (2014).

**Line is one of the more important art elements. By definition, "Line is defined as a mark that spans a distance between two points (or the path of a moving point), taking any form along the way. As an art element, line pertains to the use of various marks, outlines and implied lines in art work and design, most often used to define shape in two-dimensional artwork." Each line you see in art has a different length and thickness. They also can be sharp or fuzzy and at the same time, indicate direction. More importantly, lines define the edges of a form in any painting. In**

**doing this, they can be vertical, horizontal, diagonal, curved, thick or thin, and straight or curved(**James, 2015).

**When using lines to indicate direction, the horizontal line suggests calm and the horizon in a landscape. It gives the feeling of peacefulness and space. The lines delineate sections of the scene, which recede into the distance. The vertical line suggests being at attention. They indicate power and strength. They also give you a feeling of twelve because they are perpendicular to the ground. Diagonal lines suggest action and movement. They show animation, vitality, and indicate a feeling of falling. Horizontal and vertical lines used together express permanence. They convey solidity and sturdiness. Any line that is curved, such as those on the human body will give a pleasing quality and have a softening effect on the composition.**

**Ways Artists use line**

Common ways artist use line according to James, (2015) Are:

i. to outline; a starting place for many drawings or paintings
ii. to suggest moods or emotion; lines can appear calm, nervous, angry, etc.
iii. to lead the viewer's eye through a work of art
iv. to create lightness or darkness; lines placed close together appear darker than those placed further from each other
v. to create texture; roughness or smoothness

An Artist might decide to continue working on a drawing and enclose some of those lines. The enclosed lines are then transformed into another element of art called shape.

**Shapes**

Everything has a shape, but what exactly is a shape? Shape is a flat area surrounded by edges or an outline. Artists use all kinds of shapes. Geometric shapes are precise and regular, like squares, rectangles, and triangles. They are often found in human-made

things, like building and machines while biomorphic shapes are found in nature. These shapes may look like leaves, flowers, clouds,things that grow, flow, and move. The term biomorphic means: life-form (bio life and morph form). Biomorphic shapes are often rounded and irregular, unlike most geometric shapes.

Shapes are areas of enclosed space that are two-dimensional. Shapes are flat, and can only have twelve and width. The two different categories of shapes are: geometric and organic. Geometric shapes are mathematical, like circles and squares. Organic shapes come from nature, like clouds and leaves. This collage by Henri Matisse uses a collection of organic shapes. Amy, (2014). If an artist decide to vary the size and placement of your lines and shapes, he will use another element. This is the element called space.

**What Creates a Shape?**

In its most basic form, a shape is created when a line is enclosed. Line and shape are two elements in art that are nearly always used together. For example, three lines are used to create a triangle while four lines can make a square. In other instances, you can use value, colour, or texture to define a shape. It can or cannot include a line in order to achieve this.

Shapes are limited to two dimensions: length and width. There are also two types of shapes used in art, geometric and organic (Shelley, 2017).

**Shapes and Space in Art**

Shapes are everywhere and all objects have shape. When painting or drawing, you create a shape of that drawing in two dimensions. Artist add value to give it highlights and shadows, making it look more three-dimensional. However, it is not until form and shape meet, such as in sculpture, that a shape becomes truly three-dimensional. That is because form is defined by including~~twelve along with~~ length and width,~~.~~ Shelley, (2017).

Shape also relates to space in art. Another essential element, space can often be used to reference negative and positive space, which can define a shape.

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**Seeing Shape within Objects**

In the first stages of drawing, artists will often break their subjects down into geometric shapes. This is intended to give them a basis on which to create the larger object with more details and in correct proportion.

You can look at any object in the same way: everything is made up of a series of base shapes. Exploring the work of the Cubist painters is a great way to see how artists play with this elementary concept in art. Shelley (2017)

**Space**

Space deals with the illusion of depth on a flat surface. Artist might overlap shapes to make some look closer, or make objects in the distance smaller to look like they are farther away Amy, (2014). The element of space can be used in three-dimensional art as well. For instance, if an artist draw a solid black coffee cup on white paper, the black is your positive space. The white negative space around it and between the handle and the cup helps define the basic shape of that cup.

**Texture**

Texture is the way something feels, or looks like it might feel, in an artwork. Texture can be real or implied. Real texture is something you can actually feel with your fingers if you touch the art Violeta, (2012). Implied texture only visually looks like it feels a certain way. If you ran your fingers over implied texture, it wouldn't feel any different. Implied texture was used in this print by Albrecht Durer.

**Types of textures**

Texture is the character of a surface and is both tactile and visual. Violeta, (2012).

i. Tactile texture is the tactile quality of a surface, such as rough, smooth, sticky, fuzzy, soft or slick. A real texture is one you can actually feel with your hand, such as a piece of sandpaper, a wet glass, or animal fur. It also can be created by an artist by doing a collage.

ii. Visual texture is a visual quality of a surface. It is the result from painting or drawing as the real texture. Visual texture is an illusion of texture created by an artist. Paint can be manipulated to give the impression of texture, while the paper surface remains smooth and flat.

Texture can have more impact through variation and relief - contrasting rough areas with smooth ones. That will make a painting far more interesting than an even, unrelieved texture going from edge to edge.Creating textures is easy; it's where and how artist place them that makes the difference between a good painting and an ordinary one.

### 2.5.2 Importance of visual art Curriculum

Training in the Visual Arts empowers students with skills and they develop constructive mental ability. Chukueggu (2010), is of the opinion that on the process of creation, certain useful qualities are acquired such as; observation, students develop the power to observe objects and to represent some on any suitable surface. Imagination is the aspect which reveals how the work of art is achieved. It is known that all works of invention are produced or created from imagination and thinking. That which comes out is from the abundance stored in the mind. Aesthetics is also created from the concept of beauty. It is the concept of appreciating art works; art encourages art appreciation as part of its training. In all lives endeavour, there is the desire for the pleasurable, the good and the beautiful. It is clear that the notion of beauty has diverse implications that exceed the physical appearance. The element of goodness therefore is a variance of that which is beautiful in many African cultures. There is hardly a distinction between the English

words beautiful, good, nice, fine even enough. According to Enamhe (2010), Art in education portends the following specific social benefits:

i. Through art, ~~pupils~~students can develop their skill in the use of materials through experimentation, manipulation and practice.

ii. Art is a way to become a creative person in almost all fields of endeavour.

iii. Art is a way to become a flexible, confident person through the presentation of ideas in visual language.

iv. Art is the way to clarify and fix ideas in the mind through visual reiteration, strengthening what has been learnt about something.

v. Art finds practical use in other subjects; some subjects need illustrations and experiments. Good and accurate illustrations are helpful in explaining points, which may be difficult to explain in words. (Enamhe, 2010).

### 2.5.3 Challenges in the implementation of visual arts curriculum

The implementation of this laudable programme has been hampered by a lot of problems. The policy was not matched with the provision of adequate instructional materials, infrastructural facilities, manpower, and funds. Consequently, majority of the graduates of the programme have not been able to live up to expectation in that it has failed to make significant contributions to the development of the country's resources and add to its material wealth (Chukueggu, 2010). These problems evolve some changes and initiatives by Art Educational Planners which, consequently, is an index for progress and thus increasing (reflecting on) the current knowledge base in the Visual Arts. Moreover, the progress made in the Visual Arts so far at the national level and higher institutions have made less impact in some of the Secondary Schools (Eisner and Olorukooba, 2012). On that note, only specific implementation problems encountered by the Creative Arts teachers and students in the teaching/learning situation of the Creative Arts at the

secondary School will be highlighted. On the level of the teacher, the curriculum content implementation and evaluative procedures is influenced by his values and level of orientation. The most common problems hampering the effective implementation of arts according to Amy (2014),are as follows:

**Inadequate Space for Creative Art Classes**

In some schools, there are no rooms allocated for the teaching of Creative Arts, such as Art studios and Music rooms, with furniture designed for this purpose. Teaching is carried on in the makeshift classroom, whereby the teacher moves from one class to the other to deliver lessons. This can be very uninspiring and boring. Also, finished work which are supposed to be mounted to boost the morale of students are not displayed due to shortage of accommodation and display facilities.

**Unruly Behaviour and Apathy on the Part of Students to lessons**

The teacher is faced with some student's negative responses to lessons, suchthat we have students who run out of class the moment they have Art orMusic on the timetable. Some students develop what may be regarded as"Mind Set" such that when instruction is given to them, they appear to beaverse to change. This poor attitude makes the teaching to be very difficult.

**Lack of Administrative Interest**

Many school principals lack interest in the Creative Arts. As such, the teachers do not get co-operation from the principals in terms of getting somebasic equipment and materials which will help in promoting art and culturalactivities within the school.

**Timetabling**

Situations exist where insufficient time is allocated on the timetable for Fine Arts and Music. Inadequate time and ill-timing of Fine Arts and Musicperiods on the timetable of some of the schools result in the non-completionof the curriculum content by the teacher.

**Lack of Parental/Community Interest and Support**

This situation becomes evident from students inability to procure basic Artmaterials, as a result of some parents nonchalant attitude to providing thebasic Music and Art materials for their children/wards. The situation is evenworse where parents prevent their children/wards from doing Art inpreference for science-oriented subjects.

**Lack of Incentive to Work**

Due to lack of incentives, currently some of the teachers are no longerenthusiastic about their job. This situation frustrates some teachers that thereis the temptation of engaging themselves in private practice at the expense oftheir classroom activities.On the part of the students, some of the problems enumerated above affectthem in one form or the other. ~~I will however discuss the most serious ones.~~

**Lack of Materials, Equipment and Shortage of Textbooks in theCreative Arts**

Majority of the students are faced with the problem of providing themselves with the essential materials, and so those with zeal for the subject are deniedthe opportunity of exhibiting their talent. With the increasing cost of foreign exchange, the importation of some art materials is limited. With the number of textbooks being very negligible, students do not have enough reference materials to turn to in an attempt to widen their intellectual horizon.

Most of the schools lack equipment, Instructional Materials and materials. Musical instruments such as piano, xylophone, and basic equipment such as gramophone

records, tape-recorder (reel to reel), cassette, and video tapes are not provided in the Music Department in these Secondary Schools. Even, some schools do not have adequate furniture for students. It is rare to see donkeys, potter's wheel, kiln and photographic materials in the Visual Arts Department. With the non-availability of these~~is~~ basic equipment, tools and materials, the Creative Arts curriculum is adversely affected.

**Shortage of Qualified Art and Music Teachers**

There is at present a dearth of qualified Art and Music teachers in the secondary schools. Most of the schools lack the professionally trained Graduate Art and Music teachers, who are much more exposed both academically and professionally to handle the programme well at the secondary school level. In schools where only one Art/Music teacher serves three hundred to six hundred students, efficiency is reduced.

**2.6 Effect of computer assisted instruction on performance of students in visual art.**

A goal of education is to help students learn and to measure this learning, assessments are commonly used. Several studies have been done to determine if a relationship exists between CAI and learning (test scores) and long term retention. One such study involved 15 and 16 year old students using an interactive graphics program (Thomas and Tall, 2015). One year after completing the study, both experimental and control groups were retested using the original post-test. Students who used CAI performed significantly higher than students in the control group~~ supporting other research studies~~ (Bruce and Levin, 2016). Conflicting evidence has been presented in other studies that students who used CAI either had no significant difference in post test scores or scored lower than students receiving traditional lessons (Santally, Boojawon, and Senteni, 2014) and no significant difference in long term retention was determined (Cannon, 2015).

Research conducted with 14 and 15 year old children by Thomas and Tall (2015), involved fifty-seven matched pairs of students in mixed ability classes were split into two groups. The experimental group completed a dynamic art module and the control group learned by teacher directed instruction. Students in the control group scored higher on skill-based questions, while students using CAI scored better on higher level thinking questions. The impact of interactive CAI on higher level thinking has been supported in other research (Wenglinsky, 2008). In one study involving 33 college students, both control and experimental groups had similar mean test scores, but students working with interactive CAI scored higher on tests involving transfer of concepts. A different experiment split 115 third-grade students into two groups to learn about fire safety (Chaung & Chen, 2009). Raised cognitive levels appeared to be a result of CAI with high interactivity in the form of a computer game). Regardless of age or education level, high interaction between user and computer seems to increase differentiation and recall, promote problem solving skills, enhance comprehension and encourage higher level cognitive thinking (Chaung & Chen, 2009).

A meta-analysis on CAI was done by noted researchers, Kulik and Kulik (2011). For this meta-analysis, 254 studies were evaluated to insure each fit four criteria: (1) each study had to have taken place in a real classroom, (2) both control and experimental groups had to have been evaluated using the same quantitative measure, (3) no methodological flaws could be apparent, and (4) the studies had to be obtainable from select sources. The studies involved a wide range of learners, from kindergarten to adult, and were organized into similar groups; effect sizes for each group were analysed. Students using CAI (referred to as CBI in this study) had assessments scores increase from the 50th to the 62nd percentile or typically by about 0.30 standard deviations. Another positive aspect found was CAI users used one-third less instruction time

compared to students not exposed to CAI. Duration of use also had an effect on test scores. Students working with CAI four weeks or less had a standard deviation of 0.42, while extended use lowered the standard deviation to 0.26. A meta-analysis by Luik (2012) done 13 years later involving 52 studies of Taiwanese students found comparable results. The average mean of study-weighed effect size was 0.552 for approximately 5000 students with 81% of the studies showing positive effects of CAI use. In addition to improved test scores and learning, CAI has impacted students in unexpected ways. Users of CAI demonstrated increased computer self-efficacy, an individual's perception of their computer skills and knowledge.

### 2.7 Types of Technology and their Educational Applications

Many different types of technology can be used to support and enhance learning. Everything from video content and digital moviemaking to laptop computing and handheld technologies (Mark, 2012) has been used in classrooms, and new uses of technology such as podcasting are constantly emerging. Various technologies deliver different kinds of content and serve different purposes in the classroom. Becker (2009) cited examples such as word processing and e-mail promote communication skills; database and spreadsheet programs promote organizational skills; and modelling software promotes the understanding of science and math concepts. It is important to consider how these electronic technologies differ and what characteristics make them important as vehicles for education.

Furthermore, another researcher Prensky (2015), stated that technologies available in classrooms today range from simple tool-based applications (such as word processors) to online repositories of scientific data and primary historical documents, to handheld computers, closed-circuit television channels, and two-way distance learning classrooms. Even the cell phones that many students now carry with them can be used to

learn. Each technology is likely to play a different role in students' learning. Reeves, (2008); Ringstaff and Kelley, (2012) were of the opinion that rather than trying to describe the impact of all technologies as if they were the same, researchers need to think about what kind of technologies are being used in the classroom and for what purposes. Two general distinctions can be made; students can learn "from" computers-where technology used essentially as tutors and serves to increase students basic skills and knowledge; and can learn "with" computers—where technology is used as a tool that can be applied to a variety of goals in the learning process and can serve as a resource to help develop higher order thinking, creativity and research skills.The primary form of student learning "from" computers is what Murphy, Penuel, Means, Korbak and Whaley (2011) described as Discrete Educational Software (DES) programs, such as integrated learning systems (ILS), Computer-Assisted Instruction (CAI), and Computer-Based Instruction (CBI). These software applications are also among the most widely available applications of educational technology in schools today, along with word-processing software, and have existed in classrooms for more than 20 years (Becker, Ravitz, and Wong, 2010).

According to Murphy et al, (2011) teachers used DES not only to supplement instruction, as in the past, but also to introduce topics, provide means for self-study, and offer opportunities to learn concepts otherwise inaccessible to students. The software also manifests two key assumptions about how computers can assist learning. First, the user's ability to interact with the software is narrowly defined in ways designed specifically to promote learning with the tools. Second, computers are viewed as a medium for learning, rather than as tools that could support further learning.While Discrete Educational Software (DES) remained the most commonly used approach to computer use in student learning, in more recent years, use of computers in schools has grown more diversified as

educators recognize the potential of learning "with" technology as a means for enhancing students' reasoning and problem-solving abilities. In part, this shift has been driven by the plethora of new information and communication devices now increasingly available to students in school and at home, each of which offers new affordances to teachers and students alike for improving student achievement and for meeting the demand for 21st century skills describe earlier. It is no~~No~~ longer limited to school labs, school hours and specific devices, technology access is increasingly centred on the learner experience.

Some researchers such as Bruce and Levin (2016), for example, looked at ways in which the tools, techniques, and applications of technology can support integrated, inquiry-based learning to "engage children in exploring, thinking, reading, writing, researching, inventing, problem-solving, and experiencing the world." They developed the idea of technology as media with four different focuses: media for inquiry (such as data modelling, spreadsheets, access to online databases, access to online observatories and microscopes, and hypertext), media for communication (such as word processing, email, synchronous conferencing, graphics software, simulations, and tutorials), media for construction (such as robotics, computer-aided design, and control systems), and media for expression (such as interactive video, animation software, and music composition).In a review of existing evidence of technology's impact on learning, Mark (2012) found strong evidence that educational technology "complements what a great teacher does naturally," extending their reach and broadening their students' experience beyond the classroom. "With ever-expanding content and technology choices, from video to multimedia to the Internet," Mark ~~shall~~(2009) suggests "there's an unprecedented need to understand the recipe for success, which involves the learner, the teacher, the content, and the environment in which technology is used.

## 2.8 Obstacles to the use of CAI in Nigerian Schools

There are several impediments to the successful use of Computer Assisted Instruction in Nigerian schools. Adeosun, (2013) summarised these obstacles to include: cost, weak infrastructure, lack of skills, lack of relevant software and limited access to the Internet. Adeosun, (2013) focused on some of the obstacles which are encountered and hindering the effective use of CAI in Nigerian schools are summarised as follows:

**Cost of Computer Hardware and Software:** The price of computer hardware and software continues to drop in most developed countries, but in developing countries, such as Nigeria, the cost of computers is several times more expensive. While a personal computer may cost less than a month's wages in the United State, the average Nigeria worker may require more than two years' income to buy one. (Adeosun, 2013).

Many of the schools lack adequate infrastructure such as classrooms and only few are equipped with television or radio. Apart from the basic computers themselves, other costs associated with peripherals such as printers, monitors, paper, modem, extra disk drives are beyond the reach of most schools in Nigeria. The schools cannot also afford the exorbitant Internet connection fees.

**Weak infrastructure:** Adeosun, (2013) found out that in Nigeria, a formidable obstacle to the use of computer assisted instruction is infrastructure deficiencies. Computer equipment was made to function with other infrastructure such as electricity under "controlled conditions". For the past fifteen years Nigeria has been having difficulty providing stable and reliable electricity supply to every nook and cranny of the country without success. Currently, there is no part of the country, which can boast of electricity supply for 24 hours a day except probably areas where government officials live. There have been cases whereby expensive household appliances such as refrigerators, deep

freezers and cookers have been damaged by upsurge in electricity supply after a period of power outage.

Electronics equipment such as radio, television, video recorder and even computers has been damaged due to irregular power supply. When electricity supply is not stable and constant, it is difficult to keep high-tech equipment such as computers functioning, especially under extreme weather conditions as obtained in Nigeria. The high levels of dust during the dry season in Nigeria also make electronic equipment to have short live span. In rural Nigeria most inhabitant do not have access to electricity, thereby denying rural schools opportunity to benefit from the use of electronic equipment such as radio, television, video recorders and computers. The few Internet access available in Nigeria is found in urban centres. These environmental realities are difficult to manage because fans, sealed rooms and stable electricity are lacking in many urban homes and rural areas.

**Lack of skills:** Apart from the above mentioned problems which plague the Nigerian education system, Okebukola, (2007) stated that Nigeria does not only lack information infrastructure, it also lacked the human skills and knowledge to fully integrate CAI into the education system. To use computer assisted instruction in schools in Nigeria, the need for locally trained workers to install, maintain and support these systems cannot be over emphasized. There is acute shortage of trained personnel in application software, operating systems, network administration and local technicians to service and repair computer facilities. Those who are designated to use computers in Nigeria do not receive adequate training, at worst; do not receive any training at all. Also, Yusuf, Maina and Dare (2013) revealed that most school teachers lack the skills to fully utilize technology in curriculum implementation hence the traditional chalk and duster approach still dominates in school pedagogy.

Information transfer using CAI is minimal or non-existence in secondary schools in Nigeria (Anao, 2013). School teachers in Nigeria need to be trained on educational technologies and the integration of computers into classroom teaching. According to Carlson and Firpo (2005), "teachers need effective tools, techniques, and assistance that can help them develop computer based projects and activities especially designed to raise the level of teaching in required subjects and improve student learning.

**Lack of relevant software:** There is no doubt that the ultimate power of technology is the content and the communication. Though, software developers and publishers in the developed countries have been trying for long to develop software and multimedia that have universal application, due to the differences in education standards and requirements, these products do not integrate into curriculum across countries.

Software that is appropriate and culturally suitable to the Nigerian education system is in short supply. There is a great discrepancy between relevant software supply and demand in developing countries like Nigeria. According to Salomon (1989), there are clear indications from many countries that the supply of relevant and appropriate software is a major bottleneck obstructing wider application of the computer. Even if Nigeria tries to approach this software famine by producing software that would suit its educational philosophies, there are two major problems to be encountered. First, the cost of producing relevant software for the country's educational system is enormous. Second, there is dearth of qualified computer software designers in the country. To overcome this, people need to be trained in instructional design.

**Limited access to the Internet:** In Nigeria there are few Internet providers that provide Internet gateway services to Nigerians. Such Internet providers are made up of Nigerians who are in partnership with foreign information and communication companies. Many of

these companies provide poor services to customers who are often exploited and defrauded.

**2.9 Critics of CAI**

Not all people concur with studies attributing higher test scores and acquisition of higher level thinking skills to CAI. William Rukeyser, founder of Learning in the Real World, an organization that examines "the costs and benefits of education technology", and writers Jane M. Healy and Todd Oppenheimer are critics of CAI. All three believe educators are putting too much emphasis on computers resulting in unbalanced education for children (Huynh, 2005). Critics attribute some success of CAI to the Hawthorne Effect: students do better when using computers because of increased attention. Another shared concern is that computers drain financial resources from other aspects of education, such as highly qualified teachers or availability of elective courses. A fear that students will develop short attention spans, devalue books, and have imposed boundaries on inquiry has also been voiced (Huynh, 2005).

The U.S. Department of Education sponsored the 2008 Final Report of the National Mathematics Advisor Panel. In this report, writers suggested insufficient research has been done to determine if CAI has had a conclusive impact on students' learning. Wenglinksy (2008), stated three concerns expressed by critics in the report Does It Compute? The Relationship between Educational Technology and Student Achievement in Mathematics. First, historically teachers have been resistant to change, especially with regards to technology. Critics acknowledge that CAI could benefit students, just as any other teaching strategy, but if teachers are unwilling to use technology, then it is worthless (Cuban, Kirkpatrick, and Peck, 2010; Brown, 2016). Secondly, the cost of implementing computers in a school outweighs the effect CAI might have on a student's learning. Lastly, students do not learn by exposure to content

alone, but also by the dynamic socialization between teacher – student and student – student interactions. These same ideas were mirrored fifteen years later in Rotherham(2012). Rotherham summarized his views with, "American education desperately needs an overhaul that goes far beyond upgrading computers in the classroom. It's the last major American field relatively untouched by technology."

## 2.10 Empirical Studies

In a study, carried out by Alasoluyi (2015) titled: "Effect of Computer Assisted Instruction (CAI) on Students' Performance in Economics in Senior Secondary Schools" was focused on the Nigerian Secondary School education. The study was conducted in the public Senior Secondary Schools in Ekiti State. Specifically, students of SSS II in Government Science College Iyin-Ekiti, Community High School Iyemero-Ekiti, Government College Oye-Ekiti, and Ijaloke Grammar School Emure-Ekiti with a sample of 195, using quasi-experimentaldesign. The bio-data of the respondents was analysed with the use of frequency and percentage while mean and standard deviation was used to answer the four research questions. All the four null hypotheses w<u>as</u>~~ere~~ tested at 0.05% level of significance using t-test. A t-test of independent sample was used to compare the performance of students taught using Computer Assisted Instruction (CAI) method with the performance of the group taught using only traditional method.

The findings of the study among others revealed a significant difference in the post-test performance scores of students taught Economics with the use of computer

assisted instruction when compared with those taught using the traditional method of instruction; that there was no significant difference in the performance of male and female students taught Economics with the use of computer assisted instruction. The first, third and fourth null hypotheses were rejected because the t-value was more than the p-value and the second null-hypotheses were retained as the t-value was less than the p-value. The study concluded that students perform better and score higher in Economics given test when taught using CAI enhanced method.

This is relevant to the present study because, the aim was focused on students' education. The study complements the present study towards improving students' education in Nigeria through the application of CAI for better deliverance and understanding and productivity by the learners. Although the research is related to the present study because the research was also on the use of CAI but he difference was on the subject area.

In a study, carried out by Adeosun (2013) titled: "Accessing the Relationship between CAI Usage and Integration and the Standard of Secondary School Education in a Developing Economy" ~~was~~ focused on the Nigerian Secondary School education. The main purpose of thisstudy was to address CAI in relation to secondary school education and relate it to sustainable development of education in Nigeria. The key assertion of the study was that the effective use of CAI for secondary school education ~~addres~~addressed~~ses~~ both the problem and solution to computer based learning, seeking synergistic results that benefit students as they graduate and carry out these in their future studies.

The data for the study were gathered through a two page questionnaire, which was administered to 120 respondents who were accessible in two secondary schools. This study was empirical and exploratory in nature as a two-paged structured

questionnaire with a 4-point scale; where 1 equal to the lowest and 4 equal to the highest was used to collect data. The questionnaire included two major sections: "A" Demographic profile, and "B" Secondary school education programs emphasis scale. Section "A" required the respondents to check the boxes as it applied to them, which included their gender, age, status, and class. Section "B", the core of the questionnaire required respondents to rate a list of items on CAI usage and integration.

The findings of this study revealed that there are significant relationships between CAI integration and usage and the poor standard of secondary education programs which invariably affected the standard of student's performances. The findings of the survey on Secondary School Education staff perception of the impact of CAI on secondary school student education in Nigeria suggested that the respondents were disgruntled with the sluggish use and integration of CAI in both the states and federal government owned schools in general and into Senior Secondary school education programs in particular. The study used the Statistical Package for Social Sciences (SPSS) software in analysing the data collected of which this present study also adopted in analysing the data collected.

This study was relevant to the present study in that, the study dwelled on students' education and had a direct bearing to the present study as the present study wasis geared towards improving students' education in Nigeria through the application of CAI for better deliverance and understanding by the learners. Although this study wasis relevant to this present study, the researcher only carried out a survey and did not investigate the effects of CAI on students' performances.

A research by Yafei (2013) on the application of computer aided design in art and design. The research was position paper and found out that modern art design is the

product of the combination of science technology and art, and it is a comprehensive discipline with all kinds of scientific cultural knowledge and art discipline combined closely, also the integration of science technology and art. Using the modern diversified thinking mode to study the application of computer aided art design in the field of art and design.

She further asserted that computer aided art design has a lot of incomparable superiorities than traditional design methods of artificial, due to the improvement of design software which greatly improves the efficiency and accuracy of the drawing process. All stages of design can use computer software to complete; simple use computer knowledge to design software to complete the art design will come true. With the rapid development of computer technology, the 21st century has entered the era of electronic information, computer technology is widely used in various industries, and computer also played an irreplaceable role in the aspect of art and design. Computer aided design provides art designers an unprecedented form of expression of art. Compared with the traditional single set of art, the expression means of computer aided art design is faster. He asserted that computer aided art design is not universal, but the change computer aided design has brought is huge, its positive role is revolutionary too, but regard traditional hand-painted as it will be replaced by computer on the final verdict is not rational. If art designer all take computers as the only form of art and design performance, the hand will be abandoned by people. People who have hand-painted experience know, hand-painted has completely different experience from computer drawing, hand-painted can bring the real experience, which is able to carver completely into the artistic conception of product design, so in the process of drawing the inspiration of art designer may be further inspired, and hand-painted brings spiritual satisfaction which can't be replaced by computer drawing.

This research is related to this study in that it was able to compare the conventional methods as against the use of CAI. The researcher accept the fact that computers cannot completely take over art but can make art work faster and easier. But the researcher failed to find out the use of computer in the elements of design.

~~A research conducted by~~ Stephen (2015)conducted a research on modernisation of graphic design as the possibilities and challenges of digitalization. Using a case study of a hybrid-media graphic artist and other cultural research insights, this paper was aimed at uncovering qualitative insights to exemplify the role of technology in the improvement of cultural arts and the design process. He asserts that as inventions go, the contrivance of design as a dynamic, fluid, operational vehicle of human technology has always been subject to arguments and debates. The digitalisation of graphic design is a comparatively new field of research, a progressive process that evolves with technological developments. Undoubtedly, the evolution of design practices has transformed the entire design process in ways not deemed possible in the past. The advantages of digitalisation are particularly tangible in the range of possibilities generated by computer-based design tools. The main argument for the increase in "design capital" has been the accessibility of modern art tools to both design practitioners and the wider society, through mass digital culture absorption and the emerging technologies of production and reproduction.~~,~~In presenting the fundamentals of digitalisation in design practices.

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Thepaper retraces the key cornerstones in the evolution of graphic design as an aesthetic medium from the 19th - to 21st -century, while pointing out the expanding, reflexive relationships between design and our environment. The researcher's aim was~~is~~ to connect the socio-historical developmental frames of social progress and the practical uses of digitalisation in art and design today. The innovations in computer mediated

design work today grew from experimental platforms in the 20th -century, inasmuch as technological diffusion in the 21st -century Information Age derived from the widespread global embrace of the World Wide Web, multimedia and graphical computing systems. As a result of this development of the technological 'canvas', the production of design, aesthetic and cultural objects has shifted from the traditional artist-craftsman-specialist paradigm to reflect a more encompassing, diverse scope of ideas fostered by the exposure to different facets of creative capital and inspirations.

The social benefits and detriments of designing in the digital environment must be understood, before designers can assume the promise to produce a full scope of practical, ethical yet enthusiastic insights to improve social attitudes and meet economic necessities. It is through the design communities' integration of specialised craft skills, experiential insights and technological abilities that enables the global culture of social participation to be idealised and the concepts of selfhood, relationships and community, redefined.

This work is related to the present study because the researcher was able to give insight on the gains of training of young ones in the process of the digitalization of art and design at the early stage for them to meet the required capacity to contribute to nation building. But the paper was not able to give a practical outcome of the research and this is the gap the researcher intends to fill.

~~In a study carried out by~~ Roblyer and Edwards (2010) carried out a study titled: "The Effect of Computer-Assisted Instruction on Students' Attitudes and Performance in Visual Arts in Secondary Schools in Uasin Gishu District, Kenya". This study investigated the perception of students' usage of CAI in Kenya's senior secondary schools. The survey method was applied in the study; the population of the study which

consisted of students from three senior secondary schools were 205 students, 105 in Experimental groups and 100 in Control groups participated in the study.117 students were male and 88 were female and the sampling technique used for the study was the cluster random sampling.

Data were analysed using the analysis of variance (ANOVA). All statistical significance were tested at alpha = 0.05 level. Analyses of the post-test achievement and attitude scores were conducted to establish the homogeneity of subject groups. Result of a 2(treatment) by 2 (Gender) by 3(school type) Factorial ANOVA of achievement revealed no significant difference for the main and interaction effects. These analyses indicated that the subjects were homogeneous in Visual Arts performance and attitude on pre-test scores. Eventually, the two treatments (CAI and Conventional instruction) were assigned at random to each of the two schools in each category.

The results of this study indicated that there was a significant difference in the Visual Arts performance and attitude of Form IV students according to the treatments. These indicate the need for educators to provide opportunities for all students to engage in CAI groups in Visual Arts. It is not suggested here that all Visual Arts content be studied using CAI mode, however, Visual Arts educators are encouraged to recognize the effectiveness and benefits of this alternative approach and to structure more CAI lessons in their classrooms. A possible explanation for the effectiveness of CAI learning in this study involves students' active involvement in the learning process through frequent and student-machine interaction. However, differences were found according to gender within treatment groups. As a result, there is need for further research to ascertain whether the differences are coincidental or genuine.

With little research having been conducted in Kenya in Visual Arts on CAI, a major contribution of this study is that the CAI approach is more effective than

conventional approach for producing performance and attitude gains in such a population. In an effort to meet the needs of increasingly diverse students, CAI provides Visual Arts educators with an effective instructional approach for enhancing the success of the youth in the evolving ICT society.

This study is relevant to the present study because it was able to look into the performance of the students taught using CAI in visual arts. This is in line with the present study which was to find out how CAI enhances teaching and improves on learning. This study also provided literature which is very vital to this present study. But the study to very few elements of design which is very important when carrying out a research in visual arts.

AIn the study carried out by Yusuf and Afolabi (2010) researched on the effects of computer assisted instruction (CAI) on secondary school students' performance in visual art. Also, the influence of gender on the performance of students exposed to CAI in individualised or cooperative learning settings package was examined. The research was a quasi-experimental involving a 3 x 2 factorial design. The sample for the study comprised 120 first year senior secondary school students (SSS I) sampled from three private secondary schools, in Oyo State, Nigeria. The students' pre-test and post test scores were subjected to Analysis of Covariance (ANCOVA). The findings of the study showed that the performance of students exposed to CAI either individually or cooperatively were better than their counterparts exposed to the conventional classroom instruction. However, no significant difference existed in the performance of male and female students exposed to CAI in either individual or cooperative settings. Based on the research findings recommendations were made on the need to develop relevant CAI packages for teaching visual arts courses in Nigerian secondary schools. The research also revealed that the early introduction of the students to the use of CAI will not only

make them an expert of the course but make them a master in the field thereby contributing to the development of the society at large.

This study is related to this present study as it examined effect of computer assisted instruction (CAI) on secondary school students' performance in visual art, the study made use of quasi-experimental design which the present study will also use. Literatures were gotten from the research because it focused on the effect of CAI. The difference in the study is that research didn't look deeply into the elements of design,

In his study Okeke (2015), ~~the researcher~~ investigated the effect of computer assisted instruction (CAI) and interest as determinant of senior secondary II chemistry's achievement in chemistry equilibrium in Port Harcourt, Nigeria. Pre-test-post-test, control group quasi-experimental design study involving a 2x2x2 factorial matrix was adopted. Finding revealed that majority of boys has positive interest towards chemistry when they use computers thaen the girls in school. Students should be motivated to the use of computer assisted instruction to pursue careers in science by designing attractive models of instruction in schools at all times. Stockholders and NGO's should be encouraged and equip schools with new technology and computers for easy learning.

This study revealed that there is need to start investing into technology because in years to come computers would be the future.~~,~~

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This is in line with the present study that is trying to know how effective it would be if technology is been integrated into the education system. Teachers are no more the sole custodians of knowledge but with CAI, they now direct and assist learners in acquiring knowledge. On the Students in the Computer Era, literature was reviewed and some researchers stated that students are now taking a greater responsibility for their own learning, as they seek, find and share knowledge with others. Through CAI there has been a rise in the quality of educational delivery; Classroom Trainer Resistance to e-

learning which is informed by concept of work role, belief about practice, beliefs about quality of e-learning, personality factors, and vision of technology as a support tool; Teacher Education in CBL, Rationale for CAI in Teacher Education which is based on the fact that there is a changing role of teachers with the Computer era there is the advocating for computer technology to be infused in the entire teacher education programme so that students should experience innovative technology-supported learning environments in their teacher education programme; and some Empirical Studies reviewed which were directly related to the present study. The research is relevant to the present study because it focused on students' performance in using CAI but the difference was on the subject area which is chemistry.

~~A study conducted by~~ Lindsay (2009) conducted a study on using coloureffectively incomputer graphics. This research shows that colour is a powerful and attractive aspect of our experience of the world. It shapes our perception, interpretation, and memory of everything we see. Colour therefore provides an important dimension in visual communication: when used well, it can greatly enhance the effectiveness of a message, but when used badly it may substantially impair it.

Visual communication means the transfer of information from one person to another via a visual medium. Computer graphics and computer-generated imagery constitute one visual-communication medium in a long list that includes drawing, painting, printing, photography, cinema, and television. In every case, the effective use of colour depends not only on the particular medium's affordances (its intrinsic strengths and limitations) but also on human factors and the context in which the audience views the display. Choice of graphic colour palettes and handling of image colour rendering must arise from a user-cantered design perspective that considers all aspects of the specific communication.

Using colour effectively in computer graphics is a complicated subject because so many different factors influence how the colour will be seen: the type of display device, the viewing environment, the visual capabilities of the user, the task and application requirements, the juxtaposition of other graphical windows and displays, and so on. There are no easy formulas guaranteed to work in all circumstances. Still, by following the five golden rules for colour selection you'll certainly produce more effective displays than you would without them.

This research is related to the present research because it was able to break down the application of colours using computers and was able to outline its importance and it uses. The research did not cover areas related to application of colours for ~~pupils~~students of younger generation who would benefit for the present study and this is the gap the researcher intends to cover in this work.

A study conducted by Nana, Akosua and Harry (2015)on Perceptions, Attitudes and Institutional Factors that Influence Academic Performance of Visual Arts Students in Ghana's Senior High School Core Curriculum Subjects To ascertain the factors that account for lowperformance of Visual Arts students in the WASSCE core subjects, this study employed interview, questionnaireand observation to gather qualitative and quantitative data from 20 core subject and 15 Visual Arts teachers, 5heads of schools, 5 Heads of Visual Arts department and 50 Visual Arts students in five Senior High Schools(SHSs) in Ashanti Region.

The findings revealed that some core subject teachers denigrate Visual Arts studentsas 'unintelligent', 'not serious' and 'difficult to teach' as compared to their peers in the Science, Business andallied elective SHS programmes; with some refusing responsibility in Visual Arts departments. Perceiving coresubjects as 'theoretical' and 'difficult to learn', many Visual Arts students neglect the learning of core subjectsand

concentrate time and effort on elective Textiles, Ceramics and allied Visual Arts subjects. Invariably, manyVisual Arts students make poor WASSCE grades in core subjects and miss participation in higher education.Active monitoring of teaching, attitudinal change and motivation could build the capacity of Visual Arts studentsto participate fully in the economic development of Ghana.

After so many literature reviews, it should be noted that this study is focused mainly on students in the secondary school. This study was carried out to groom future leaders who would turn around the country through skills and knowledge that can acquired from learning using CAI.

Both studies focused on the performance of students in visual arts and how it can positively affect the students but the difference is that the research focused on the attitudes and institutional factors that influence performance of students.

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## 2.11 Summary

In this chapter, literature that was reviewed are in the following areas: Emergence of computer and the need for computer education in Nigeria was discussed and from the literature it was revealed that computer have come to stay and it may be the future of education in Nigeria. The development and Integrating CAI into the Classroom Teaching and Learning which revealed that CAI integration into the classroom enhances, and extend student knowledge, interest, attitude and better delivery in education. The Theoretical Framework by engaged learning, which implies all student activities involve active cognitive processes such as creating, problem-solving, reasoning, decision-making, and evaluation. Furthermore, students are interested to learn with the meaningful nature of the learning environment and activities to carry out when using a computer.

Engagement theory is based upon the idea of creating successful collaborative teams that work on ambitious projects that are meaningful to someone outside the classroom; in an attempt to reveal the Nature of CAI, it was made to realize that the use of computers in schools may be divided into learning about computers and learning with, from or through computers.

Students are now taking a greater responsibility for their own learning, as they seek, find and share knowledge with others. Teachers are gradually fading out from been custodian of knowledge, instead they now direct and assist learners in acquiring knowledge. On the Students in the Computer Era, literature was reviewed and some researchers stated that. Through CAI there has been a rise in the quality of educational delivery, improved productivity and creativity among students. Some Empirical Studies reviewed were closely related to the study but not exactly the subject of the study in the review critics of CAI were also sort to know how effective CAI would be. It was latter concluded by thesei~~s~~ critics that CAI ~~is~~ has contributed positively to education and this makes it very paramount to also conduct a study in the subject area so as to be confident that the effect of CAI would be positive to the interest and attitude of visual art students.

The literature revealed that the use of CAI visual arts is unavoidable because there are openings within the society where those who are good in graphics can get daily bread in the face of the prevailing challenges of unemployment in ~~the~~ Nigeria. The empirical studies shows that most research on CAI in Art have been done majorly on position papers and survey design methods. Therefore, this study will fill this gap by employing the use of quasi-experimental design to investigate the effect of CAI on students' performance in Visual Arts.

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# CHAPTER THREE
# RESEARCH METHODOLOGY

## 3.1 Introduction

This chapter explains the research design and methodology that was used for this study under the following sub-headings: Research Design, Population of the study, Sample and sampling techniques, Research Instrument, Validity of the Instrument, Pilot Study, and Reliability of the Instrument, Procedure for data collection, and Procedure for data analysis.

### 3.2 Research Design

This study made use of Quasi-experimental design. Quasi-experimental is a research design used to estimate the causal impact of an intervention on its target population. It allows the researcher to control the assignment to the treatment condition, but using some criterion other than random assignment (Dinardo 2008). This study sought to find out the effect of computer-assisted instruction on performance of visual art students. In this research, two groups were used, (experimental and control group). The experimental groups were exposed to treatment, using CAI. Control group were exposed to treatment but to conventional teaching method only. Consequently, the research design was illustrated below:

Experimental Group $O_1 \longrightarrow X \longrightarrow O_2$

Control Group $O_1 \longrightarrow -- \longrightarrow O_2$

**Key:** $O_{1:}$ Pretest X: Treatment $O_{2:}$ Post Test

### 3.3 Population of the Study

The targetpopulation of this study comprised of all SS2 students in all the public and private secondary school's in Kaduna state, Nigeria. There are Six thousand six hundred and fifty one (6651) SS2 students spread across Three hundred and thirty four (334) public and private schools. Table 1 shows the summary of the total population of the SSS II students inall the public and private senior secondary schools in Kaduna state according to educational zone.

**Table1: Population of the Study**

| S/N | Educational Zones | Number of Public/Private Schools | No. of Male | No. of Female | Total No. of Students |
|---|---|---|---|---|---|
| 1. | Achau | 30 | 283 | 285 | 568 |
| 2. | Birnin-Gwari | 18 | 287 | 181 | 468 |

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| | | | | | |
|---|---|---|---|---|---|
| 3. | Giwa | 16 | 285 | 285 | 570 |
| 4. | Godogodo | 22 | 281 | 289 | 570 |
| 5. | Kaduna | 37 | 284 | 282 | 566 |
| 6. | Kachia | 34 | 289 | 238 | 527 |
| 7. | Kafanchan | 40 | 286 | 285 | 571 |
| 8. | Lere | 13 | 287 | 280 | 567 |
| 9. | Riga-Chikun | 22 | 283 | 252 | 835 |
| 10. | Sabo-Tasha | 37 | 288 | 290 | 578 |
| 11. | Zaria | 31 | 282 | 279 | 561 |
| 12. | Zonkwa | 34 | 285 | 285 | 570 |
| **Total** | | **334** | **3420** | **3231** | **6651** |

**Source: Kaduna State Ministry of Education (2015)**

### 3.4 Sample and Sampling Techniques

The study was conducted in Zaria educational zone out of the twelve educational zones in Kaduna State. In Zaria zone~~the zone (Zaria)~~ Four (4) secondary schools were used out of the thirty One (31) schools. The schools were purposely selected in view of the peculiarities of the study. These includes nature and status of subject the schools are offering and the nature of the study. For the study four intact classes were used, in which the number of students met in each of the classes sixty four(64) males and forty females (40) served as the sample size. Meanwhile the schools selected for the study (Demonstration secondary school Zaria and Zaria Academy for the experimental group. Hence, Nuhu Bamali Staff Secondary School and Government Secondary School Bassawa wassampled as the control group). Feasibility of the study showed that the schools have student size offering Visual Art in SS2 to be one hundred and six (106) and thisservedas the sample size. The classification of the population into control and experimental group i ~~i~~s ~~be~~ presented in Table 2.

**Table 2: Sample Size Distribution**

| **Sample Schools** | **Gender** | | **Total number of SSS II Students** |
|---|---|---|---|
| | **M** | **F** | |

| | | | | |
|---|---|---|---|---|
| | Zaria Academy | 20 | 9 | **29** |
| A | | | | |
| | Demonstration secondary school zaria | 17 | 10 | **27** |
| | Nuhu Bamali Staff Secondary School | 18 | 13 | **31** |
| B | | | | |
| | Government Secondary School Bassawa | 9 | 10 | **19** |
| | **TOTAL (M + F)** | **64** | **42** | **106** |

### 3.4.1 Determination of Homogeneity of the Sample

There are about 377 public and private secondary schools within the region under study out of which four (2) schools was purposefully sampled based on their homogeneity.

i. Use of the same curriculum

ii. Availability of facilities

iii. Quality of teachers in terms of qualifications.

In determininge the homogeneity of sample for the study the researcher picked the schools for the research from the same educational zone. The selected schools in the zone used the same curriculum. Also the infrastructures available for students were at equal supply. Both schools had a well-equipped computer laboratory. The qualifications of the teachers teaching in the schools were similar. The Art teachers of the schools used had the same qualifications as this made the research fair and avoided any better treatment than other.

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### 3.5 Instrumentation

The instrument for this research consists of test questions. The test instrument was named "Visual Arts Performance Test" (VAPT). The experimental group and the control group were given a pre-test to ensure homogeneity. The test items were based on the selected graphic design units on (1) colour (2) lines (3) shapes (4) Forms (5) Texture. The test was administered to both experimental and control group, which is intended to measure the learning outcome. The test instrument; Visual Arts Performance Test (VAPT), was drawn from the past Senior School Certificate Examination (SSCE) Visual Art questions. The test item consists of two practical questions. The students picked one question and each question took a duration of three hours (3hrs).

The content of the instrument covered all the levels of cognitive and psychomotor domain of learning. The researcher utilizedBloom's Taxonomy of learning which provides an important framework for teachers to use to focus on higher order thinking. By providing a hierarchy of levels, the taxonomy model helped the researcher to design performance tasks and the crafting of questions for conferring with students, and providing feedback on student work. Table 3.3 illustrates the procedure used by theresearcher to prepare the instrument for the research.

**Table 3: Table of Specification**

| | Knowledge | Comprehension | Application | Analysis | Synthesis | Evaluation |
|---|---|---|---|---|---|---|
| Design a pictorial poster for the campaign incorporating the slogan:<br><br>LIVE CLEAN LIVE WELL. Colours: Not more than three. Size: 15 cm by 23 cm | | | √<br><br>**1** | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| Design a pictorial poster for the campaign incorporating the slogan:<br><br>PROUDLY AFRICAN. Colours: Not more than three.Size:15cm by 23cm | | | | | √<br><br>**1** | |

**Knowledge:** students should be able toexhibits memory of previously learned material by recalling fundamental facts, terms, basic concepts and answers about the selection.

**Comprehension:**students should be able tosolve problems in new situations by applying acquired knowledge, facts, techniques and rules in a different, or new way.

**Application:** students should be able tosolve problems in new situations by applying acquired knowledge, facts, techniques andrules in a different, or new way.

**Analysis:** students should be able toexamine and break information into parts by identifying motives or causes. Makeinferences and find evidence to support generalizations.

**Synthesis:** students should be able tocompile information together in a different way by combining elements in a new patternor proposing alternative solutions.

**Evaluation:** students should be able topresent and defend opinions by making judgments about information, validity of ideas orquality of work based on a set of criteria.

**Lesson Plan**

Sequential lesson plans was developed by the researcher and was used by the regular Visual Art teacher who was the research assistants in order for the uniformity of the research. The lesson plan for each objective was prepared and the research assistants matched them to their respective instructional guide. The topics was broken down into achievable behavioural objectives. The lesson plans wereas given to two experienced

Visual Art teachers for validation. The instrument also was given to experts in graphics department in the faculty of industrial design. They were requested to examine the Clarity and appropriateness of the lesson objectives for the students, Conformity of the instructional methods and appropriateness of the instructional materials and relevance of student activities and evaluation questions for the lessons.

### 3.5.1 Validity of the Instrument

The researcher submitted the drafted instruments to both his first and second supervisors in Curriculum and Instruction Section, Department of Educational Foundations and Curriculum, Ahmadu Bello University, Zaria. These items were~~as~~ subjected to thorough scrutiny and proof-reading by these experts to ensure that its contents were in line with the research questions. This view was supported byAlasoluyi (2015) who stated that to ascertain the validity of any instrument it should be given to a panel of experts to determine if its items (contents) can elicit the desired data they are intended to elicit and this in essence was~~is~~ to ensure its content validity to ensure that necessary adjustments are made thereafter.

### 3.5.2 Pilot Study

A pilot test was conducted to ascertain the reliability and suitability of the Visual Arts Performance Test (VAPT) instrument. The pilot test was carried out using twenty (20) students which were randomly sampled from First Baptist high school Zaria, Kaduna state. Though this school was~~is~~ part of the population of this study, but not part of the sample to be used for this study. The reason for the choice of First Baptist high school was~~is~~ that the school was~~is~~ believed to be more or less equivalent in standard to the schools that will be used for this study. Hence, the Visual Arts Performance Test

(VAPT) which wasis 2 practical items were administered to twenty (20) SS II students of First Baptist high school.

### 3.5.3 Reliability of the Instrument

A test is said to be reliable if repeated measuring using the test gives more or less the same results. After the Pilot Testing, the result of the teacher made test was analysed using Pearson Product Moment Correlation Coefficient (PPMCC). A reliability coefficient of 0.92 was obtained. This meants that the instruments wasis reliable. This, therefore, confirmsthat the research instruments wasissuitable and reliable for use as an instrument fordata collection for the main study.

## 3.6 Procedure for Data Collection

The procedure that wasused for data collection involved the use of: Treatment, and Post-test

**Pre-test**

Pre-test was the initial stage of test that was administered simultaneously to both Experimental and the Control groups before treatment. The two groups (experimental and control groups) was subjected to VAPT as pre-test. A Man Whitney test was used to ensure homogeneity and assess the level of the groups' prior knowledge for the performance of the treatment and control groups using the same learning environments before conducting any experiments.

**Treatment**

The treatment for both groups lasted for ten(10) weeks. After the test of pre-test, the experimental group were exposed to the Corel Draw which was installed on the schools computers. The students in the experimental group was exposed to Corel Draw format under teacher's supervision long enough for them to be familiar with the navigation buttons and use the package independently. In addition, they were encouraged

to practice more on what they have been taught independently and to take enough notes that could be useful for them in the post-test. The control group students were exposed to the conventional teaching method on the same content used for experimental groups. This was done by the regular visual art teacher who is specially trained in visual Arts.

**Post-test**

After the treatment period of twelveweeks, the two groups were exposed to VAPT as post-test. While the experimental group took the test using a computer installed with Corel Draw graphic software, the control group weretested using conventional method with the use of paper pencil, ruler and colours. The test results of each test for the treatment group and control group were collected separately and then subjected to statistical analysis. The performance of the experimental group members who were taught using a range of innovative methods were compared with the performanceof the control group members who were taught using only traditional methods. The experiments employed two different learning environments: the Traditional Learning approach (TL), and the Computer-Assisted instruction (CAI).

**Table 4: Treatment plan / procedure (Experimental group)**

| Week | Unit | Content | Procedure |
|---|---|---|---|
| 1 | Basic elements of design | a. what is design<br>b. what are the elements of design | Student in this group will be taught how to use Corel draw software on a computer to draw different types of lines |
| 2 & 3 | Lines | a. What is line<br>b. Types of line<br>c. Uses of line | Student in this group will be taught how to use Corel draw software on a computer to draw different types of lines |
| 4 | Shapes | a. What are shapes<br>b. Types of shapes | Student in this group will be taught how to use Corel draw software on a computer to draw different types of shapes and select different types of |

| | | | |
|---|---|---|---|
| | | c. Uses of shapes | shapes. |
| 5 & 6 | Texture | a. What is texture in design<br><br>b. Types of texture<br><br>c. Uses of texture in design | Student in this group will be taught how to use Corel draw software on a computer to select different background layers with different textures |
| 7 & 8 | Colour | a. What is colour<br><br>b. Types of colours<br><br>c. Uses of colour | Student in this group will be taught how to use Corel draw software on a computer to pick and mix colours and also add colours to designs |
| 9 | Fonts | a. What is fonts in design<br><br>b. Uses of type in design<br><br>c. Types of fonts | Student in this group will be taught how to use Corel draw software on a computer to pick and mix colours and also add colours to designs |
| 10 | Integrating colour, lines, type, shapes, texture to form design | c. Designing different posters, calendars, fliers, etc. | Student in this group will be taught how to use Corel draw software on a computer to design and illustrate different works such as book covers, calendars, fliers, adverts etc. |

**Table 5: Treatment plan / procedure (Controlled group)**

| Week | Unit | Content | Procedure |
|---|---|---|---|
| 1 | Basic elements of design | a. what is design<br><br>b. what are the elements of design | Students in the group will be taught using the traditional method. The method will involve the use of the following: |
| | Lines | a. What is line | |

| | | | |
|---|---|---|---|
| 2 & 3 | | b. Types of line<br><br>c. Uses of line | Sketchpads: A traditional tool used to sketch out ideas; it is the quickest way to jot down the rough designs.<br><br>Colour pallets: a tool used to mix colours for painting.<br><br>Painting brush: tool used for painting.<br><br>Drawing board: flat surface plywood where the students can place their drawings and designs.<br><br>Stationeries: this includes pencil, pen, eraser, rulers, arcs and instruments that can be used to make shapes etc. |
| 4 | Shapes | a. What are shapes<br><br>b. Types of shapes<br><br>c. Uses of shapes | |
| 5 & 6 | Texture | a. What is texture in design<br><br>b. Types of texture<br><br>c. Uses of texture in design | |
| 7 & 8 | Colour | a. What is colour<br><br>b. Types of colours<br><br>c. Uses of colour | |
| 9 | Fonts | a. What is fonts in design<br><br>b. Uses of type in design<br><br>c. Types of fonts | |
| 10 | Integrating colour, lines, type, shapes, texture to form design | c. Designing different posters, calendars, fliers, etc. | |

### 3.7 Procedure for Data Analysis

Both descriptive and inferential statistics wereasused in the analysis of data. The demographic data of the respondents wasanalysed using frequencies and percentage while the descriptive statistics of mean and standard deviation was used to answer the research questions earlier stated in chapter one of this study, followed by detailed interpretation.For the four hypotheses, inferential statistics oft-test was used to test them at p =<0.05 (5%) level of significance. The t-test was appropriate to test whether the means of the two groups are *statistically* different from each other.

# CHAPTER FOUR
# DATA PRESENTATION, ANALYSIS AND DISCUSSION

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## 4.1 Introduction

This study was carried out with the aim to examine the effect of Computer Assisted Instruction (CAI) on students' performance in Visual Art in senior secondary schools in Kaduna State, Nigeria. To achieve this, 106 participants participated in the study. 56 students formed the treatment group while 50 students formed the control group. Post-test was administered to each group and the test were subjected to statistical analysis using the appropriate tools and procedure in SPSS Ver. 22 The result was presented in tabular form as follows.

## 4.2 Description of the Study Variables

A total number of 106 SS II students offering Visual Art from the four (4) purposive selected senior secondary schools in one (1) senatorial district of Kaduna State were involved in the study. The demographic variables used for the study were: group and gender. These variables are tabulated in frequencies and percentages respectively in Tables 6 and 7.

**Table 6: Frequency and percentage of respondents based on Groups**

| Groups | Frequency | Percentage |
|---|---|---|
| **Control group** | **50** | **47.2** |
| **Experimental group** | **56** | **52.8** |
| **Total** | **106** | **100.0** |

Table 4. Indicated that 50 representing (47.2%) of the respondents belongs to control group and 56 representing (52.8%) of the total respondents were experimental group. Although, experimental group were more represented in the study, yet the distribution shows that both control and experimental group were fairly represented in the study and thus eliminated any bias that could have been attributed to group sentiments in the study.

**Table 7: Frequency and percentage of respondents based on Gender**

| Gender | Frequency | Percentage |
|---|---|---|
| **Male** | **64** | **60.4** |
| **Female** | **42** | **39.6** |
| **Total** | **106** | **100.0** |

Table 5. Showed that 64 representing (60.2%) of the respondents were male while 42 representing (39.6%) of the total respondents were female. Although, experimental group were more represented in the study, yet the distribution shows that both control and experimental group were fairly represented in the study and thus eliminated any bias that could have been attributed to group sentiments in the study.

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**Answers to Research Questions**

This section reports the result of the analysis of questionnaires

**4.3 Research Question One:** What is the effect of the utilization of computer assisted instruction on the performance of visual art students in senior secondary schools in Kaduna State, Nigeria?

Table 8~~6~~: presented the result CAI on students' performance in Visual Arts as compared to the traditional method of instruction using different learning environment. The data collected through the administration of post-test was analysed using descriptive statistic including mean and standard deviation. Table 8 present the summary of analysis carried out in respect of the effect of the utilization of computer assisted instruction on the performance of visual art students in senior secondary schools in Kaduna State, Nigeria.

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**Table 8: Descriptive Statistics Table Showing the Mean and Standard Deviation of the Post-Test Score of Control and Experimental Group.**

| *Group* | *N* | *Mean* | *SD* |
|---|---|---|---|
| **Conventional.** | **50** | **6.57** | **2.04** |
| **CAI** | **56** | **9.15** | **4.23** |

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Note: CON. = Control group, CAI. = Experimental group

Table 8, revealed that students' post-test performance vary widely when taught using CAI as against conventional method. The result revealed the mean value of 6.57 and standard deviation of 2.04 for students taught using Conventional Method, while the experimental~~control~~ group has a mean score of 9.15 and a standard deviation of 4.23.This implies that students taught visual art using CAI techniques performed better over those taught using traditional (TL) lecture method in senior secondary schools in Kaduna state, Nigeria.Note: conventional. = control group, CAI. = experimental group

**4.4 Research Question Two:** How is the performance of students taught fundamentals of colours with the use of computer-assisted instruction and conventional method in visual arts in senior secondary schools in Kaduna state?

Table 9: presented the result of the performance of students taught fundamentals of colours in visual arts. The data collected through the administration of post-test was analysed using descriptive statistic including mean and standard deviation. Table 9 presents the summary of analysis carried out in respect of theperformance students taught fundamentals of colours in visual arts in senior secondary schools in Kaduna State.

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**Table 9: Descriptive Statistics Table Showing the Mean and Standard Deviation performance of student's fundamentals of colours with the use of CAI and Conventional Method.**

| *Gender* | *N* | *Mean* | *SD* |
|---|---|---|---|
| **CAI** | **37** | **10.37** | **7.53** |
| **Conventional** | **19** | **6.71** | **3.07** |

Table 9, revealed that students' post-test performance vary widely when taught using CAI as against conventional method. The result revealed the mean value of 10.37 and standard deviation of 7.53 for experimental group, while the conventional group have a mean score of 6.71 and a standard deviation of 3.07. This infers that there was wide difference in the performanceof studentstaught fundamentals of colours using CAI and Conventional Method in senior secondary schools in Kaduna state, Nigeria.

**4.5 Research Question Three:** To what extent is the effect of the use of computer assisted instruction and conventional method on the performance of students taught shapes in visual art in senior secondary schools in Kaduna state?

Table 10: presented the result of CAI on students' pre-test and post-test performance of students when taught shapes in Visual Arts. The data collected through the administration of pre-test and post-test were analysed using descriptive statistics including mean and standard deviation. Table 10 presents the summary of analysis carried out in respect of the effects of computer assisted instruction (CAI) on the the performance of students taught shapes in visual art in senior secondary schools in Kaduna state.

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**Table 10: Descriptive statistics table showing the mean and standard deviation of the performance of students taught shapes in visual art.**

| *Source* | *N* | *Mean* | *SD* |
|---|---|---|---|
| **Conventional** | **56** | **6.97** | **2.07** |
| **CAI** | **56** | **11.86** | **5.13** |

Table 10, revealed that students' post-test performance vary widely when taught using CAI as against conventional method. The result revealed the mean value of 6.97 and standard deviation of 2.07 for conventional group, while the Experimental group have a mean score of 11.86 and a standard deviation of 5.13. This infers that there was wide difference in the performance of the experimental and control group of students when taught shapes in visual art in senior secondary schools in Kaduna state.

**4.6 Research Question Four:** What is the effect of the use of computer assisted instruction CAI and conventional method on the performance of students in identification of textures in senior secondary schools in Kaduna state?

Table 11: presented the result on the impact of the use of computer-assisted instruction and conventional method on the performance of students taught identification of textures. The data collected through the administration of post-test were analysed using descriptive statistic including mean and standard deviation. Table 8 presents the summary of analysis carried out in respect of the impact of the use of computer-assisted instruction and conventional method on the performance of students taught identification of textures in senior secondary schools in Kaduna state.

**Table 11: Descriptive statistics table showing the mean and standard deviation of post-test students' performance of students taught identification of textures in senior secondary schools in Kaduna state.**

| *Source* | *Group* | *N* | *Mean* | *SD* |
|---|---|---|---|---|
| **Scores** | **CAI.** | **56** | **10.28** | **3.73** |
| | **Conventional** | **50** | **7.88** | **3.01** |

Note: conventional. = control group, CAI. = experimental group

Table 11, revealed that students' post-test performance vary widely when taught using CAI as against conventional method. The result revealed the mean value of 10.28 and standard deviation of 3.73 for experimental group, while the conventional group have a mean score of 7.88 and a standard deviation of 3.01. This infers that there was wide difference in the performanceof studentstaught identification of textures in senior secondary schools in Kaduna state, Nigeria.

## 4.4 Hypotheses Testing

Four null hypotheses were formulated in Chapter One to give statistical validation to findings from research questions of the study. In order to test them for retention or rejection, data were collated from sampled participant (students); these hypotheses are tested as follows:

**Hypothesis One:** There is no significant difference in the performance of students taught with computer-assisted instruction and those taught with the traditional method in visual art in senior secondary schools in Kaduna State.

The students' scores in post-test were taken and t-test was used in testing the hypothesis. The Summary of data collected and analysed in respect to null hypothesis one is presented in Table 12

**Table 12: Independent sample t-test showing differences in Post-test scores of Control and Experimental group.**

| *Group* | *N* | *Mean* | *SD* | *Df* | $\alpha$ | *t-cal* | *t-crit* | *P value* | *Remark* |
|---|---|---|---|---|---|---|---|---|---|
| **Conventional** | **50** | **6.57** | **2.04** | **104** | **0.05** | **6.03** | **1.96** | **.000** | **Significant** |
| **CAI** | **56** | **9.15** | **4.23** | | | | | | |

Note: Conventional = Control group, CAI. = Experimental group

Table 12, shows that there is significant difference. This was as a result of the observed t-cal which shows that 6.03 is greater than t-crit of 1.96 while the p-value is 0.000 ($p<0.05$). Therefore, the null hypothesis which states that there was no significant difference in the performance of students taught with computer-assisted instruction and those taught with the traditional method in visual art was rejected. This implication is that the treatmentadministered on experimental group was effective.

**Hypothesis Two:** There is no significant difference in the performance of students taught fundamentals of colours with the use of computer assisted instruction and conventional method in visual arts in senior secondary schools in Kaduna state.

Independent sample t-test procedure was used for the test and the summary is presented in table 13 below:

**Table 13: Independent sample t-test showing differences in performance of students taught fundamentals of colours using CAI and Conventional method.**

| *Sex* | *N* | *Mean* | *SD* | *Df* | *α* | *t-cal* | *t-crit* | *P value* | *Remark* |
|---|---|---|---|---|---|---|---|---|---|
| **CAI** | **56** | **10.37** | **7.53** | **104** | **0.05** | **3.65** | **1.96** | **.324** | **significant** |
| **Conventional** | **50** | **8.71** | **3.07** | | | | | | |

Table 13, shows that there is significant difference. This was as a result of the observed t-cal which shows that 3.65 is higher than t- crit of 1.96 while the p-value is .324 (p>0.05). Therefore, the null hypothesis which states that there was no significant difference in the performance of students taught fundamentals of colours with the use of computer assisted instruction and conventional method was rejected. This implication is that the treatment administered on experimental group was effective.

**Hypothesis Three:** There is no significant difference in the effect of the use of computer assisted instruction and conventional method on the performance of students taught drawing of shapes and forms in visual art in senior secondary schools in Kaduna state**.**

In the test of this null hypothesis, independent sample t-test was used in establishing if there is significant difference in the effect of computer assisted instruction and conventional method on the performance of students taught drawing of shapes and forms in visual art in senior secondary schools in Kaduna state. The result is summarized in Table 14 below:

**Table 14: independent sample t-test showing differences in the effect of computer assisted instruction and conventional method on the performance of students taught drawing of shapes and forms.**

| *Source* | *N* | *Mean* | *SD* | *Df* | *α* | *t-cal* | *t-crit* | *P-value* | *Remark* |
|---|---|---|---|---|---|---|---|---|---|
| **CAI** | **56** | **11.86** | **3.13** | **104** | **0.05** | **5.33** | **1.96** | **.007** | **Significant** |
| **Conventional** | **50** | **6.97** | **2.07** | | | | | | |

Table 14, shows that there is significant difference. This was as a result of the observed t-cal which shows that 5.33 is higher than t-crit of 1.96 while the p-value is .007 (p>0.05). Therefore, the null hypothesis which states that there was no significant difference in the performance of students taught drawing of shapes and forms in visual art was rejected. This implication is that the treatment administered on experimental group was effective.

**Hypothesis Four:** There is nosignificant difference in the use of computer-assisted instruction and conventional method on the performance of students taught identification of textures in senior secondary schools in Kaduna state**.**

In the test of this null hypothesis, independent sample t-test was used in establishing if there is significant difference in the use of computer-assisted instruction and conventional method on the performance of students taught identification of textures. The result is summarized in Table 15 below:

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**Table 15:Independent sample t-test showing differences in performance of students taught identification of textures using CAI and Conventional method.**

| *Source* | *N* | *Mean* | *SD* | *Df* | *α* | *t-cal* | *t-crit* | *p-value* | *Remark* |
|---|---|---|---|---|---|---|---|---|---|

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **CAI** | **56** | **10.28** | **3.73** | | | | | | |
| | | | | **104** | **0.05** | **4.94** | **1.96** | **.001** | **Significant** |
| **Conventional** | **50** | **7.88** | **3.01** | | | | | | |

Table 15, shows that there is significant difference. This was as a result of the observed t-cal which shows that 4.94 is higher than t-crit of 1.96 while the p-value is .001 (P>0.05). Therefore, the null hypothesis which states that there was no significant difference in the use of computer-assisted instruction and conventional method on the performance of students taught identification of textures in senior secondary schools was rejected. This implication is that the treatment administered on experimental group was effective.

### 4.5 Summary of Major Findings

The following findings emerged from the study based on the analyzeddata collected from the study;

1. The performance scores of students taught Visual Arts with the use of computer assisted instruction was better compared to those taught using the traditional method of instruction (t-cal = 6.03, *P* = .000).
2. Students taught fundamentals of colours with computer assisted instruction performed better than students taught using the conventional method (t- cal = 3.65, *P* = .324).
3. The performance of experimental group of students was better than the performance of students in controlled group when taught shapes in visual arts. (t-cal = 5.33, *P* = .007).
4. Students taught identification of textures with computer assisted instruction performed better than students using the conventional method. (t-cal = 4.94, *P* = .001).

### 4.6 Discussion of Findings

Analysis of data in table 10 revealed that there wassignificant difference in the post-test performance scores of students taught Visual Arts with the use of computer assisted instruction when compared with those taught using the traditional method of instruction in ~~0~~favour of those in taught using CAI.This is in line with the findings of Yusuf and Afolabi (2010) whose findings revealed that performance of students exposed to CAI either individually or cooperatively were better than their counterparts exposed to the conventional classroom instruction. The plausible explanation on the abovefindings is that the treatment indicates better performance of experimentalgroups (i.e. those taught with Computer Assisted Instruction). This means thatthe way the teachers in the experimental groups taught the lessons, enablesstudentsto be more committed to their learning. The motivational drive of theuse of Computer AssistedInstruction approaches enables them to take timeand master what they learnt and have and have an in-depth ability to think and explore new things.

Analysis of data in table 11 revealed that there wassignificant difference in the performance of students taught fundamentals of colours with the use of computer assisted instruction and conventional method. This was in line with the research conducted byLindsay (2009) on using coloureffectively incomputer graphics. This research shows that colour is a powerful and attractive aspect of our experience of the world. It shapes our perception, interpretation, and memory of everything we see.Edwards (2012), also found out in his research that for students CAI allows students be able to explore wide range of colours with little effort. This implies that with the advent of technology students can easily mix colours, get unique colours and even avoid error when working with computers.

Analysis of data in table 12 revealed there was significant difference in the effect of computer assisted instruction on the performance of students taught shapes in visual

art in senior secondary schools in Kaduna state.This in line with Okeke (2015), who asserted that Teachers are no more the sole custodians of knowledge but with CAI, they now direct and assist learners in acquiring knowledge. Critics acknowledge that CAI could benefit students, just as any other teaching strategy, but if teachers are unwilling to use technology, then it is worthless (Cuban, 2010). The implication of this is that students are now taking a greater responsibility for their own learning, as they seek, find and share knowledge with others.

Analysis of data in table 13 revealed that there is significant difference in the use of computer-assisted instruction and conventional method on the performance of students'identification of textures in senior secondary schools in Kaduna state. Students were able explore more textures and was able to manipulate and reduce the level of error committed during design. This is also in line with Alasoluyi (2015) and Adeosun (2013) who also have the same view on the use of computer in exploring different materials. In their research they both advocate the introduction of computers into the secondary system as students can be able to explore more useful material in their work quickly. The implication of this findings is that application of CAI will bring about better deliverance and understanding and productivity by the learners

# CHAPTER FIVE
# SUMMARY, CONCLUSION AND RECOMMENDATIONS

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## 5.1 Summary

This study was carried out in order to determine the effect of ComputerAssisted Instruction (CAI) on students' performance in Visual Arts in senior secondary schools in Kaduna, Nigeria. To attain the objectives of this study, four objectives, four research questions and four null hypotheses were postulated to guidethe conduct of the study. Quasi-experimental design was used for the study. Out of the entiresix thousand six hundred and fifty one (6651) students, the total of one hundred and six (106)SSII students was purposively sampled for the study. The experimental group was made up of 56 students and 50 students constituted the students in thecontrol group.

After the development of the instrument titled: Visual Arts Performance Test (VAPT) used for the study. This instrument was given to two experts in the department of industrial design ABU Zaria for the purpose of content/face validity, while to establish the reliability of the instrument, pilot study was carried out with the use of test/retest which is a 2 items practical question which wasdrawn from the past Senior School Certificate Examination (SSCE) Visual Art questions units based on selected graphic design units on (1) colour (2) lines (3) shapes (4) Forms (5) Texture. The test content was based on a table of specification covering the six levels of cognitive domain of learning.

Related literature was reviewed as well as theoretical framework that supports the use of CAI in teaching of Visual Arts in secondary schools was discussed; the impact of CAI on students' performances in Visual Arts was inclusive. Also, the importance of CAI to teacher training, types of technology and their Educational applications and the problems which are hindering the proper use of CAI in Nigerian schools have been highlighted. The need for effective use of CAI in teaching of Visual Arts was reviewed, as well as empirical studies which are relevant to the present study. Major gaps that were realised in the review of related literatures was that, few of the authors carried out experiments to examine the effects of CAI on students' performances in basic elements of Visual Arts and this present study focused on to bridge the existing gap.

The data collected for the study was presented in tables and analysed using Statistical Package for Social Sciences (SPSS) Version 22. Alsofrequencies and percentages was used to analyse the bio-data of the respondent andmean and standard deviation were used to answer the research questions. The four null hypotheses were formulated and tested at 0.005 percent level of significance. All Hypothesis were tested using independent sample t-test.

## 5.2 Conclusion

Findings from the research provided the basis for the researcher todraw the conclusion that the use of CAI in teaching of Visual Arts in senior secondary school will add to students level of thinking and thereby improving on their performance.Since the use of computer packages is clearly a strategy that reflectsmodern business and industry practices and provides students with a learnabletool for creative thinking and problem solving abilities, it is hoped that ifComputer Assisted Instruction packages such as design applicationa are introduced into the secondary school curriculum and are employed as one of the methods for teaching Visual Arts to students in the secondary schools in

Kaduna State; the studentswill improve not just on learning and passing the senior secondary schoolcertificate (SSCE) Examinations with better grade also they will learn vocational skills that will make them productive and self-reliant. They will also be able tocontribute their quota to maintain peace and order in the nation as a result of CAI collaborative learning.

### 5.3 Recommendations

Based on the major findings of this study, the following measures were recommended:

1. The use of CAI method in teaching Visual Arts students should be encouraged and imbibed by teachers of Visual Arts in senior secondary schools in Kaduna State. The integration of technologies in education is becoming essential to the future of quality arts education, art production and improved arts learning for students in the 21st century. Hence,emphasis should be placed on the pedagogy behind the use of CAI by teachers of Visual Arts for teaching of Arts in the educational system.
2. Teachers should be trained and encouraged to teach students the fundamentals of colours and how to apply it using computers. This would allow students to explore various types of colours and even learn to mix colours virtually.
3. CAI facilities and software such as Corel Draw, Photoshop, and illustrator should be made available and handy to teachers by government and philanthropist.

~~3. and they should be able to utilise this software's to effectively guide students on functions of shape and drawing different types of shapes in art.~~

4. Lastly, teachers should encourage students to use CAI to source for various types of design textures from the internet and guide the students on how to make use the textures to making meaningful design.

## 5.4 Implications of the Findings

The findings of the study have implication for Visual Art teachers,government and administrators of secondary schools and the curriculumplanners.

The findings of this study revealed that Computer Assisted Instruction(CAI) improved students' academic performance in Visual Arts than the use of conventional teaching methods only. The implication ofthese findings is that students offering Visual Arts will learn better, developmore interest, explore more advanced facilities, and retain their learning better when Computer AssistedInstruction (CAI) is used as one of the teaching methods for teaching Visual Arts. Also, teaching and learning of Visual Art is simplified, interesting and time saving, this allows students to have critical thinking, save and continue work any time of the day with less errors.

Also VisualArts teachers will be challenged to do more of research on how well to effectively deliver lectures with the use of Computer Assisted Instruction (CAI) to encourage student-centredlearning in Visual Arts and creativity in senior secondary schools in Kaduna State. The teachers should be encouraged to be computer literate andhave computers for themselves.

The adoption of the Computer Assisted Instruction (CAI) in teachingVisual Arts requires the procurement of softwares and well-equippedcomputer laboratory for its effectiveimplementation. This implies that schooladministrators and the government need to constantly make provision foremployment of competent Graphics Artist who will be working with the teachers teachingVisual arts in secondary schools in Kaduna State.

The findings of the study will also help the planners of secondaryschool curriculum by giving them information relating to the teaching andlearning of Visual Arts, such as indicating modern appropriate strategies inmodification and revision, and also in the introduction of skills in Visual Art curriculum. The study will helpcurriculum planners to have knowledge of interaction between gender andinstructional approach in Visual Arts.

## 5.6 Suggestion for Further Study

1. Further studies on the Assessment of the utilization of computer assisted instruction (CAI) in secondary school visual arts curriculum.

2. Assessment of effect of~~Consideration for the development of~~ skilled based visual art curriculum through computer assisted in basic education should be carried out in further research.~~.~~

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**APPENDIX A**

Curriculum and Instruction Section,

Department of EducationalFoundation,

Faculty of Education,

Ahmadu Bello University,

Zaria.

Dear Respondent,

**REQUEST TO PERTICIPATE IN A RESEARCH**

I am a Postgraduate student of the above school and department carrying out a research titled: "*Effects of Computer-Assisted Instruction (CAI) on Performance of Visual Arts students of Senior Secondary Schools in Kaduna State, Nigeria*".

I solicit for your support in participating in the research process. The answers collected through the use of this research instrument shall be treated confidentially and shall be applied only for the purpose of this research work.

Thank you for your anticipated cooperation.

Yours sincerely,

Ogunyemi Yinka Dayo

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**LESSON UNITS**

Subject: Visual Art 3

Lesson topics: Consist of 7 lessons

1. Elements of Design
2. Lines
3. Shapes
4. Colour
5. Texture

6. Fonts
7. Space

**LESSON PLANS FOR COMPUTER ASSISTED INSTRUCTION (CAI) STRATEGY**

**Teacher's guide for computer assisted instruction (CAI) strategy.**

Computer-assisted instruction (CAI) is the process by which written and visual information is presented in a logical sequence to a learner with the aid of a computer. The student learns by reading the text material presented or by observing the graphic information displayed and practice work themselves on a computer. Alasoluyi (2015).

CAI can be characterized as interactive and individualized learning which focuses on students' needs, abilities and interests with only the teacher as a facilitator of learning. To make lesson computer assisted instruction (CAI) approach, attention must be given to the following aspects;

1. Encourage group activities
2. Use concrete instructional aids.
3. Organize activity based instruction.
4. Allow students interactions through independent work.
5. Encourage asking questions.

**Experimental Group**
**Week One**
**Lesson 1**

| | |
|---|---|
| **Subject:** | visual art |
| **Class:** | SSS II |
| **Duration:** | 45 minutes |
| **Period:** | 4th |

| | |
|---|---|
| **Average age:** | Age $14^{+}$ |
| **Sex:** | Mixed |
| **Topic:** | Graphics Design |
| **Behavioural Objectives:** | At the end of the lesson, students were be able to:<br>i. Define what is graphics design<br>ii. Analyse ~~Know~~ how graphics design relates to visual art |
| **Instructional Materials:** | computer with CorelDraw application installed on it |
| **Previous Knowledge:** | i. the students have been taught how to operate a computer<br>ii. students know how to locate icons of CorelDraw on the computer<br>iii. Students launch the application and open a new work space with preferred size. |
| **Introduction:** | The teacher introduce the new topic "what is Graphics Design" to the students. He explains further by giving various definitions of graphics design. |
| **Presentation:** | The lesson was presented in the following steps: |
| **Step I:** | The teacher explains Graphic design is the process and art of combining text and graphics to communicate an effective message in the design of websites, logos, graphics, brochures, newsletters, posters, signs and any other type of visual communication. |
| **Step II:** | The goal of graphics designs is usually to attract the viewers' attention, sometimes to motivate them to take a specific action |
| **Step III:** | The teacher explain how designers draw the viewer's attention to an important art work |
| **Step iv:** | The teacher gave practical examples by showing students different art works on the computer and they all relates to art. |
| **Summary:** | The teacher summarizes the whole lesson by repeating the whole process again in the presence of the students |
| **Student activities:** | The teacher lets the students participate in the lesson by allowing them to contribute on what they know about graphics. |
| **Conclusion:** | the teacher evaluates the students by asking them some questions on what they have been taught |
| **Assignment:** | i. What is graphics design<br>ii. How does it relates to art? |

**Experimental Group**
**Week One**
**Lesson 2**

| | |
|---|---|
| **Subject:** | visual art |
| **Class:** | SSS II |
| **Duration:** | 45 minutes |
| **Period:** | 4th |
| **Average age:** | Age 14+ |
| **Sex:** | Mixed |
| **Topic:** | Graphics Design |
| **Behavioural Objectives:** | At the end of the lesson, students should be able to:<br>iii. List ~~Know~~ all the basic elements of graphics design<br>iv. Itemise the ~~Know~~ principles of graphics design |
| **Instructional Materials:** | computer with CorelDraw application installed on it |
| **Previous Knowledge:** | iv. the students have been taught how to operate a computer<br>v. students know how to locate icons of CorelDraw on the computer<br>vi. Students launch the application and open a new work space with preferred size. |
| **Introduction:** | The teacher introduce the new topic "Graphics Design" to the students. He explains further: the basic elements of design are graphic design elements include lines, shapes, texture, value, size, and colour |
| **Presentation:** | The lesson is presented in the following steps |
| **Step I:** | The teacher explains Graphic design is the process and art of combining text and graphics to communicate an effective message in the design of websites, logos, graphics, brochures, newsletters, posters, signs and any other type of visual communication. Designers achieve their goals by combining the elements and |

principles of graphic design.

**Step II:**

The teacher explains that Graphic designers for print and web pages use some or all of these elements to generate effective designs. The goal is usually to attract the viewers' attention, sometimes to motivate them to take a specific action

**Step III:**

The teacher explain Principles of graphic design address ways in which a graphic designer can assemble the individual elements into a cohesive whole. Designers draw the viewer's attention to an important element by placing the important element in the place where the eye naturally falls. Other classic principles of design include the important element in the place where the eye naturally falls. Other classic principles of design include

- **Balance** - Most good graphic designs achieve visual balance by using symmetrical, asymmetrical or radial symmetry about a visual ~~center~~centre. In symmetrical balance, both sides of a page layout are the same in weight, shape, lines and other elements. Asymmetrical balance occurs when the two sides of a website aren't the same but they have similar elements. Radial symmetry places elements in a circular pattern. Although it is popular in print layouts, radial symmetry isn't seen n much on websites because the circular placements are difficult to achieve. Note: Occasionally, a graphic designer will intentionally produce an unbalanced design, usually in an effort to focus attention on a single element.
- **Alignment** - Alignment refers to lining up the elements of a design along the top, bottom, ~~center~~centre or sides of the elements. The aligned elements aren't necessarily of the same type. They are frequently aligned along the left edge of the layout. Different size photos appear as a unit when they are aligned across the top or the bottom.
- **Repetition** - Repetition duplicates the characteristics of similar elements to contribute to design consistency. Repetition can also create rhythm in a design. A series of bulleted points of interest in the same ~~color~~colour, type and size for a complete unit.
- **Proximity** - Proximity maintains a relationship between items that go together. The elements don't have to be positioned closely together but they should be connected visually.
- **Contrast** -Contrast occurs with the juxtaposition of opposing elements—big versus small or dark versus light, for example. Using contrast can highlight important elements of the design. Contrast is easily achieved with ~~color~~colour, but it can also occur with texture, type, and graphic elements.
- **Space** - Space is the part of a design that is left blank. It

| | |
|---|---|
| | includes empty space that is intentionally placed within the design and also margins and gutters between other elements, which are usually referred to as passive space. Space in a design adds emphasis to an area of the design because the eye is strongly drawn to the part of the design that is not empty. Both positive and negative space should be considered in the graphic design.<br>Lines are used in design and some practical uses of lines in common desktop publishing projects. |
| **Step iv:** | The teacher make a practical examples. |
| **Summary:** | The teacher summarizes the whole lesson by repeating the whole process again in the presence of the students |
| **Student activities:** | The teacher lets the students participate in the lesson by allowing them to also pick the draw tools and ask them to identify different types of design tools. |
| **Conclusion:** | the teacher evaluates the students by asking them some questions on what they have been taught |
| **Assignment:** | What are the elements of design<br><br>What are the principles of Design? |

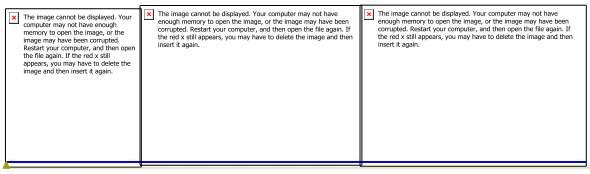
**Experimental Group**
**Week Two**
**Lesson 1**

| | |
|---|---|
| **Subject:** | visual art |
| **Class:** | SSS II |
| **Duration:** | 45 minutes |
| **Period:** | $4^{th}$ |
| **Average age:** | Age $14^{+}$ |
| **Sex:** | Mixed |
| **Topic:** | lines (as an element of design) |
| **Behavioural Objectives:** | At the end of the lesson, students were able to:<br>i. Define the concept of Lines<br>ii. Explain uses of lines in art |

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| **Instructional Materials:** | computer with CorelDraw application installed on it |
| **Previous Knowledge:** | vii. the students have been taught how to operate a computer<br>viii. students know how to locate icons of CorelDraw on the computer<br>ix. Students launch the application and open a new work space with preferred size. |
| **Introduction:** | The teacher introduce the new topic what is lines as an element of design to the students. |
| **Presentation:** | The lesson is presented in the following steps |
| **Step I:** | The teacher demonstrates the lesson to the students on how to use lines in design and how they can aid in the readability, appearance, and message of a design. |
| **Step II:** | The teacher explained the uses of line. You can use lines in conjunction with other elements of your design. Sometimes a designer uses a line alone to divide or unite elements on a page |
| **Step III:** | Lines can denote direction of movement (as in diagonal lines and arrows) or provide an anchor to hold elements on a page (such as lines at the top, bottom, or sides of a page). |
| **Step iv:** | The teacher make a practical example by drawing different types of line with the help of the line tool. He also increases and decreases the size of the lines drawn and performs different functions in the presence of the students. |
| **Summary:** | The teacher summarizes the whole lesson by repeating the whole process again in the presence of the students. |
| **Student activities:** | the teacher lets the students participate in the lesson by allowing them to also pick the draw tools and ask them to identify different types of line to test their level of understanding |
| **Conclusion:** | The teacher evaluates the students by asking them some questions on what they have been taught. |
| **Assignment:** | ~~i~~I. What is lines<br>ii. what is the uses of lines |

**Experimental Group**
**Week Two**
**Lesson 2**

| | |
|---|---|
| **Subject:** | visual art |
| **Class:** | SSS II |
| **Duration:** | 45 minutes |
| **Period:** | 4th |
| **Average age:** | Age 14+ |
| **Sex:** | Mixed |
| **Topic:** | lines (as an element of design) |
| **Behavioural Objectives:** | At the end of the lesson, students should be able to:<br>iii. locate line tools<br>iv. identify and draw different types of lines |
| **Instructional Materials:** | computer with CorelDraw application installed on it |
| **Previous Knowledge:** | x. the students have been taught how to operate a computer<br>xi. students know how to locate icons of CorelDraw on the computer<br>xii. Students launch the application and open a new work space with preferred size. |
| **Introduction:** | The teacher introduce the new topic "lines as an element of design" to the students. He explains further: Lines are one of the basic elements of design. Alone or in combination with other lines or shapes they can aid in the readability, appearance, and message of a design. |
| **Presentation:** | The lesson is presented in the following steps |
| **Step I:** | The teacher demonstrates the lesson to the students on how to use lines in design and how to locate line tools on a computer. |
| **Step II:** | The teacher explains the types of line: Lines can be long or short, straight or curved. Lines can be horizontal, vertical, or diagonal. |




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~~Different types of lines~~

**Step III:**

The teacher explain the uses of line: You can use lines in conjunction with other elements of your design. Sometimes a designer uses a line alone to divide or unite elements on a page. Lines can denote direction of movement (as in diagonal lines and arrows) or provide an anchor to hold elements on a page (such as lines at the top, bottom, or sides of a page).

- Organize
- Texture
- Guide the eye
- Provide movement
- Make a statement
- Convey universal meaning

~~lines~~Lines are used in design and some practical uses of lines in common desktop publishing projects.

**Step iv:**

~~the~~The teacher make a practical example by drawing different types of line with the help of the line tool. He also increases and decreases the size of the lines drawn and performs different functions in the presence of the students.

**Summary:**

The teacher summarizes the whole lesson by repeating the whole process again in the presence of the students.

**Student activities:**

the teacher lets the students participate in the lesson by allowing them to also pick the draw tools and ask them to identify different types of line to test their level of understanding

**Conclusion:**

The teacher evaluates the students by asking them some questions on what they have been taught.

**Assignment:**

Go through your sample folder of ads, newsletters, business cards, books, and other projects with an eye on lines. Find as many different examples of lines of all kinds used in these pieces.

Find examples of each of these six types of lines:

1. horizontal lines
2. vertical lines
3. diagonal lines
4. curved or freeform lines
5. lines used in a pattern

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**Experimental Group**
**Week Three**
**Lesson 1**

| | |
|---|---|
| **Subject:** | visual art |
| **Class:** | SSS II |
| **Duration:** | 45 minutes |
| **Period:** | 4th |
| **Average age:** | Age 14+ |
| **Sex:** | Mixed |
| **Topic:** | lines (as an element of design) |
| **Behavioural Objectives:** | At the end of the lesson, students were able to:<br>i. describe ~~identify~~ variations of Lines<br>ii. ~~How to recognise~~Identify line tools computers<br>iii. Demonstrate the ~~How to~~ drawing of lines on computers |

| | |
|---|---|
| **Instructional Materials:** | computer with CorelDraw application installed on it |
| **Previous Knowledge:** | xiii. the students have been taught how to operate a computer<br>xiv. students know how to locate icons of CorelDraw on the computer<br>xv. Students launch the application and open a new work space with preferred size. |
| **Introduction:** | The teacher introduce the new topic "lines as an element of design" to the students. He explains further by showing the students line tools and how to navigate through them on computer |
| **Presentation:** | The lesson is presented in the following steps |
| **Step I:** | The teacher demonstrates the lesson to the students on Variations of Lines<br><br>Lines come in many varieties. They may:<br>• be long, short or anything in between<br>• be thick, thin<br>• be smooth or rough<br>• be continuous, implied, dotted, dashed<br>• change direction<br>• change in degree of curve (curved Lines)<br>• be any of the above combined |
| **Step II:** | The teacher make an outline; a starting place for many drawings or paintings. |
| **Step III:** | Teachers explains how lines can be drawn on a computer. |
| **Summary:** | The teacher summarizes the whole lesson by repeating the whole process again in the presence of the students. |
| **Student activities:** | the teacher lets the students participate in the lesson by allowing them to also pick the draw tools and ask them to identify different types of line to test their level of understanding |
| **Conclusion:** | The teacher evaluates the students by asking them some questions on what they have been taught. |
| **Assignment:** | ~~draw~~DrawCommon types of lines and explain their uses. |

**Experimental Group**
**Week Three**
**Lesson 2**

| | |
|---|---|
| **Subject:** | visual art |
| **Class:** | SSS II |
| **Duration:** | 45 minutes |
| **Period:** | 4th |
| **Average age:** | Age 14+ |
| **Sex:** | Mixed |
| **Topic:** | lines (as an element of design) |
| **Behavioural Objectives:** | At the end of the lesson, students should be able to:<br><br>iv.describe the~~identify~~ variations of Lines<br>v.identify Some Ways Artists Use Line |
| **Instructional Materials:** | computer with CorelDraw application installed on it |
| **Previous Knowledge:** | ~~i~~I. The students have been taught how to operate a computer<br><br>ii. Students know how to locate icons of CorelDraw on the computer<br><br>iii. Students launch the application and open a new work space with preferred size. |
| **Introduction:** | The teacher introduce the new topic "lines as an element of design" to the students. He explains further: Lines are one of the basic elements of design. Alone or in combination with other lines or shapes they can aid in the readability, appearance, and message of a design. |
| **Presentation:** | The lesson is presented in the following steps |
| **Step I:** | The teacher demonstrates the lesson to the students on Variations of Lines<br><br>Lines come in many varieties. They may:<br><br>• be long, short or anything in between<br>• be thick, thin<br>• be smooth or rough<br>• be continuous, implied, dotted, dashed<br>• change direction<br>• change in degree of curve (curved Lines) |

| | |
|---|---|
| | • be any of the above combined |
| **Step II:** | The teacher make an outline; a starting place for many drawings or paintings<br>• ~~to~~To suggest moods or emotion; lines can appear calm, nervous, angry, etc.<br>• to lead the ~~viewers~~viewer's eye through a work of art<br>• to create lightness or darkness; lines placed close together appear darker than those placed further from each other<br>• to create texture; roughness or smoothness |
| **Step III:** | Common types of line drawings<br>• **contour line drawing;** drawings that use a fairly continuous line to represent the edges and surface detail of shape or objects being drawn<br>• **Gestural line drawing;** drawings that use quick pencil strokes (or other drawing instruments) to capture a scene. gestural drawings imply action and movement<br>• **Hatched and cross hatched line drawing;** drawings that consist or parallel lines (hatching) or crossing parallel lines (cross-hatching) drawn to create changes in lightness and darkness and texture. |
| **Summary:** | The teacher summarizes the whole lesson by repeating the whole process again in the presence of the students. |
| **Student activities:** | the teacher lets the students participate in the lesson by allowing them to also pick the draw tools and ask them to identify different types of line to test their level of understanding |
| **Conclusion:** | The teacher evaluates the students by asking them some questions on what they have been taught. |
| **Assignment:** | draw Common types of lines and explain their uses |

**Experimental Group**
**Week Four**
**Lesson 1**

| | |
|---|---|
| **Subject:** | visual art |
| **Class:** | SSS II |
| **Duration:** | 45 minutes |
| **Period:** | 4th |
| **Average age:** | Age 14+ |
| **Sex:** | Mixed |
| **Topic:** | shapes (as an element of design) |
| **Behavioural Objectives:** | At the end of the lesson, students were able to:<br>i. define shapes<br>ii. Explain uses of shapes |
| **Instructional Materials:** | computer with CorelDraw application installed on it |
| **Previous Knowledge:** | xvi. the students have been taught how to operate a computer<br>xvii. students know how to locate icons of CorelDraw on the computer<br>xviii. Students launch the application and open a new work space with preferred size. |
| **Introduction:** | The teacher introduced the new topic "shapes as an element of design" to the students. He explains further: Lines are one of the basic elements of design. Alone or in combination with |

| | |
|---|---|
| | other lines or shapes they can aid in the readability, appearance, and message of a design. |
| **Presentation:** | The lesson is presented in the following steps |
| **Step I:** | The teacher introduced lesson to the students on its most basic form, a shape is created when a line is enclosed. |
| **Step II:** | Line and shape are two elements in art that are nearly always used together and they are used to formshapes. |
| **Step III:** | The teacher explained the uses of shapes: Using shapes properly is one of the keys to successful graphic design. The form, colour, size and other characteristics for the shapes in a layout can determine its mood and message. Soft, curved and rounded shapes are perceived differently than sharp, angled shapes. The "white space" or negative space left between shapes will also significantly impact a design. Experimentation and altering of shapes within a design can ultimately lead to the desired result |
| **Summary:** | The teacher summarizes the whole lesson by repeating the whole process again in the presence of the students. |
| **Student activities:** | the teacher lets the students participate in the lesson by allowing them to also pick the shape tools and ask them to identify different types of shapes to test their level of understanding |
| **Conclusion:** | The teacher evaluates the students by asking them some questions on what they have been taught. |
| **Assignment:** | What are the uses of shapes on design and what makes up shapes |

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**Experimental Group**
**Week Four**
**Lesson 2**

| | |
|---|---|
| **Subject:** | visual art |
| **Class:** | SSS II |
| **Duration:** | 45 minutes |
| **Period:** | 4th |
| **Average age:** | Age 14+ |
| **Sex:** | Mixed |

| | |
|---|---|
| **Topic:** | shapes (as an element of design) |
| **Behavioural Objectives:** | At the end of the lesson, students were able to:<br>iii. Describe the types of shapes ~~and~~<br>iv. Explain how it relates to other elements of art |
| **Instructional Materials:** | computer with CorelDraw application installed on it |
| **Previous Knowledge:** | ~~i~~I. the students have been taught how to operate a computer<br>ii. students know how to locate icons of CorelDraw on the computer<br>iii. Students launch the application and open a new work space with preferred size. |
| **Introduction:** | The teacher introduced the new topic "shapes as an element of design" to the students. He explains further: Alone or in combination with other lines or shapes they can aid in the readability, appearance, and message of a design. |
| **Presentation:** | The lesson is presented in the following steps |
| **Step I:** | The teacher introduced lesson to the students on its most basic form, a shape is created when a line is enclosed. Line and shape are two elements in art that are nearly always used together. |
| **Step II:** | how shapes are formed<br>**Geometric shapes** are those that are defined in mathematics and have common names. They have clear edges or boundaries and we use tools to create them. Shapes in this category include circles, rectangles, triangles, polygons, and so on.<br>**Organic shapes** have no names, no defined angles, and no standards, they are simply organic. They can often be found in nature, such as a cloud or a leaf, and artists rely endlessly on organic shapes in their work |
| **Step III:** | The teacher showed the students different types of shapes on the computer and draws it for the students to see and learn. |
| **Summary:** | The teacher summarizes the whole lesson by repeating the whole process again in the presence of the students. |
| **Student activities:** | the teacher lets the students participate in the lesson by allowing them to also pick the shape tools and ask them to identify different types of shapes to test their level of understanding |

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|---|---|
| **Conclusion:** | The teacher evaluates the students by asking them some questions on what they have been taught. |
| **Assignment:** | Find examples of each of these five shapes:<br><br>1. square (not-rectangle) graphic element<br>2. square (not-rectangle) text blocks<br>3. circle graphic element |

**Experimental Group**
**Week Five**
**Lesson 1**

| | |
|---|---|
| **Subject:** | visual art |
| **Class:** | SSS II |
| **Duration:** | 45 minutes |
| **Period:** | 4th |
| **Average age:** | Age 14+ |
| **Sex:** | Mixed |
| **Topic:** | texture (as an element of design) |
| **Behavioural Objectives:** | At the end of the lesson, studentd were able to:<br>i. explain what is textures<br>ii. itemize the uses of textures |
| **Instructional Materials:** | computer with CorelDraw application installed on it |
| **Previous Knowledge:** | i. the students have been taught how to operate a computer<br>ii. students know how to locate icons of CorelDraw on the computer<br>iii. Students launch the application and open a new work space with preferred size. |
| **Introduction:** | The teacher introduce the new topic "texture as an element of design" to the students.Texturegives a sense of a tactile surface through its visual appearance and adds a sense of depth, enhanced by selection of appropriate paper and material. |
| **Presentation:** | The lesson is presented in the following steps |
| **Step I:** | The teacher introduced lesson to the students. Textures are backgrounds that simulate artworks. |
| **Step II:** | ~~visual~~Visual texture (simulated fabric, stone, or even water etc. Printed on the paper) certain printing and finishing techniques such as thermography, embossing, or spot varnish can add both actual and visual textures to a printed piece. |

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| | |
|---|---|
| **Step III:** | Uses of texture In Design: Textures can be used, especially as backgrounds that simulate familiar fabrics, stone, and other textures to create a meaningful design. |
| **Summary:** | The teacher summarizes the whole lesson by repeating the whole process again in the presence of the students. |
| **Student activities:** | ~~the~~The teacher lets the students participate in the lesson by allowing them to also to identify different types of textures and how to source for them. This is done in order to test their level of understanding. |
| **Conclusion:** | The teacher evaluates the students by asking them some questions on what they have been taught. |
| **Assignment:** | What do you understand by the word texture and is it used for? |

**Experimental Group**
**Week Five**
**Lesson 2**

| | |
|---|---|
| **Subject:** | visual art |
| **Class:** | SSS II |
| **Duration:** | 45 minutes |
| **Period:** | $4^{th}$ |
| **Average age:** | Age $14^{+}$ |
| **Sex:** | Mixed |
| **Topic:** | texture (as an element of design) |
| **Behavioural Objectives:** | At the end of the lesson, students were able to:<br>i. identify textures tools<br>ii. source different from the computer<br>iii. describe how it relates to other elements of art |
| **Instructional Materials:** | computer with CorelDraw application installed on it |

| | |
|---|---|
| **Previous Knowledge:** | ~~i~~I. the students have been taught how to operate a computer<br>ii. students know how to locate icons of CorelDraw on the computer<br>iii. Students launch the application and open a new work space with preferred size.<br>iv. Already knows what is textures and its uses |
| **Introduction:** | The teacher continues on the topic texture as an element of design" to the students.Texturegives a sense of a tactile surface through its visual appearance and adds a sense of depth, enhanced by selection of appropriate paper and material. |
| **Presentation:** | The lesson is presented in the following steps |
| **Step I:** | The teacher introduced lesson to the students. For desktop publishing, actual texture is the feel of the paper. Is it smooth to the touch or rough? Textures can also be visual. On the Web, especially, backgrounds that simulate familiar fabrics, stone, and other textures are common |
| **Step II:** | Visual texture (simulated fabric, stone, or even water etc. Printed on the paper) certain printing and finishing techniques such as thermography, embossing, or spot varnish can add both actual and visual textures to a printed piece. |
| **Step III:** | The teacher made practical examples of the application of textures to the students using the computer. |
| **Summary:** | The teacher summarizes the whole lesson by repeating the whole process again in the presence of the students. |
| **Student activities:** | ~~the~~The teacher lets the students participate in the lesson by allowing them to also to identify different types of textures and how to source for them. This is done in order to test their level of understanding. |
| **Conclusion:** | The teacher evaluates the students by asking them some questions on what they have been taught. |
| **Assignment:** | Search and print out different texture. |

**Experimental Group**
**Week 6**
**Lesson 1**

| | |
|---|---|
| **Subject:** | visual art |
| **Class:** | SSS II |
| **Duration:** | 45 minutes |
| **Period:** | 4th |
| **Average age:** | Age 14+ |
| **Sex:** | Mixed |
| **Topic:** | texture (as an element of design) |
| **Behavioural Objectives:** | At the end of the lesson, students should be able to:<br>i. understand and createe<br>ii. Apply variety of texture |
| **Instructional Materials:** | computer with CorelDraw application installed on it |
| **Previous Knowledge:** | iv. the students have been taught how to operate a computer<br>v. students know how to locate icons of CorelDraw on the computer<br>vi. Students launch the application and open a new work space with preferred size. |
| **Introduction:** | The teacher introduces the new topic "texture as an element of design" to the students.Texturegives a sense of a tactile surface through its visual appearance and adds a sense of depth, enhanced by selection of appropriate paper and material. |
| **Presentation:** | The lesson is presented in the following steps |
| **Step I:** | The teacher introduces lesson to the students. The students will create an outline picture by using the pen tool. Partition the picture into many sections. Save the pictures at this point before you go on. Go to fill bucket and choose different textures and add them to the seoerate sections. Making sure that all sections are enclosed or the texture will bleed into other sections. |
| **Step II:** | Students learn visual texture (simulated fabric, stone, or even water etc. Printed on the paper) certain printing and finishing techniques such as thermography, embossing, or spot varnish can add both actual and visual textures to a printed piece. |

| | |
|---|---|
| **Step III:** | the teacher make a practical example by selecting different types of texture with the help of textures on a computer |
| **Summary:** | The teacher summarizes the whole lesson by repeating the whole process again in the presence of the students. |
| **Student activities:** | The teacher lets the students participate in the lesson by allowing them to make different types of texture for different things that come sot their minds. |
| **Conclusion:** | The teacher evaluates the students by asking them some questions on what they have been taught. |
| **Assignment:** | Design different textures from leafs, leathers, grass and house |

**Experimental Group**
**Week 6**
**Lesson 2**

| | |
|---|---|
| **Subject:** | visual art |
| **Class:** | SSS II |
| **Duration:** | 45 minutes |
| **Period:** | $4^{th}$ |
| **Average age:** | Age $14^{+}$ |
| **Sex:** | Mixed |
| **Topic:** | texture (as an element of design) |
| **Behavioural Objectives:** | At the end of the lesson, students were able to:<br>iii. Express visual ideas<br>iv. Create and source different textures on computer |
| **Instructional Materials:** | computer with CorelDraw application installed on it |
| **Previous Knowledge:** | vii. the students have been taught how to operate a computer<br>viii. students know how to locate icons of CorelDraw on the computer<br>ix. Students launch the application and open a new work space with preferred size. |
| **Introduction:** | The teacher continued the topic "texture as an element of design" to the students. |
| **Presentation:** | The lesson is presented in the following steps |

| | |
|---|---|
| **Step I:** | The teacher draws various boxes and makes forms to create textures, |
| **Step II:** | Students participated by drawing whatever comes to their mind and making use of them to form textures for design |
| **Step III:** | the teacher make a practical example by selecting different types of texture with the help of textures on a computer |
| **Summary:** | The teacher summarizes the whole lesson by repeating the whole process again in the presence of the students. |
| **Student activities:** | The teacher lets the students participate in the lesson by allowing them to make different types of texture for different things that come sot their minds. |
| **Conclusion:** | The teacher evaluates the students by asking them some questions on what they have been taught. |
| **Assignment:** | Design different textures from leafs, leathers, grass and house. |

**Experimental Group**
**Week 7**
**Lesson 1**

| | |
|---|---|
| **Subject:** | visual art |
| **Class:** | SSS II |
| **Duration:** | 45 minutes |
| **Period:** | 5th |
| **Average age:** | Age $14^{+}$ |

| | |
|---|---|
| **Sex:** | Mixed |
| **Topic:** | colour (as an element of design) |
| **Behavioural Objectives:** | At the end of the lesson, students should be able to:<br>i. Define ~~What is~~ colour<br>ii. Explain functions of colour |
| **Instructional Materials:** | computer with CorelDraw application installed on it |
| **Previous Knowledge:** | x. the students have been taught how to operate a computer<br>xi. students know how to locate icons of CorelDraw on the computer<br>xii. Students launch the application and open a new work space with preferred size. |
| **Introduction:** | Colour is everywhere. Every single piece in the samples you've collected so far, even if it is black and white, exhibits the element of colour. |
| **Presentation:** | The lesson is presented in the following steps |
| **Step I:** | Colour is used to attract attention. It can be subtle or bold. Colour can be found in the paper, the text, or the graphic elements and photos. |
| **Step II:** | The teacher presents the lesson to the students on how to use colours in design. A monochromatic colour scheme uses a single colour, perhaps in various tints, while other layouts utilize combinations of two, three, or more colours. |
| **Step III:** | The teacher explains the features of Colour as what elicit specific emotions and reactions. Red is typically thought of as an attention-grabbing, hot colour. Blues are more calming or convey stability. Some colour combinations are used to create a specific identity (corporate colours, school colours) or may be used in conjunction with texture to simulate the look of other objects (the look of plain paper wrapping or neon lights, for example). |
| **Summary:** | The teacher summarizes the whole lesson by repeating the whole process again in the presence of the students. |
| **Student activities:** | The teacher lets the students participate in the lesson by allowing them to also to identify different types of colours, mix and how to source for them. This is done in order to test their level of understanding. |

| | |
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| **Conclusion:** | The teacher evaluates the students by asking them some questions on what they have been taught. |
| **Assignment:** | Explain what you understand by the word colour |

**Experimental Group**
**Week 7**
**Lesson 2**

| | |
|---|---|
| **Subject:** | visual art |
| **Class:** | SSS II |
| **Duration:** | 45 minutes |
| **Period:** | 5th |
| **Average age:** | Age $14^{+}$ |
| **Sex:** | Mixed |
| **Topic:** | colour (as an element of design) |
| **Behavioural Objectives:** | At the end of the lesson, students should be able to:<br>iii. locate colour tools<br>iv. Describe the uses of colours<br>v. identify and mix different types of colours |
| **Instructional Materials:** | computer with CorelDraw application installed on it |
| **Previous Knowledge:** | xiii. the students have been taught how to operate a computer<br>xiv. students know how to locate icons of CorelDraw on the computer<br>xv. Students launch the application and open a new work space with preferred size. |
| **Introduction:** | The continues from the previous lesson on what is colour |
| **Presentation:** | The lesson is presented in the following steps |
| **Step I:** | The teacher introduces lesson to the students. The students will create an outline picture by using the pen tool. Partition the picture into many sections. Save the pictures at this point before you go on. Go to fill bucket and choose different textures and add them to the seoerate sections. Making sure that all sections are enclosed or the texture will bleed into |

| | |
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| | other sections. |
| **Step II:** | The teacher presents the lesson to the students on how to use colours in design and how to locate colour tool on a computer. |
| **Step III:** | Uses of colour: Colour can be used to elicit specific emotions and reactions. Colour provides cues for the reader. |
| **Summary:** | The teacher summarizes the whole lesson by repeating the whole process again in the presence of the students. |
| **Student activities:** | The teacher lets the students participate in the lesson by allowing them to also to identify different types of colours, mix and how to source for them. This is done in order to test their level of understanding. |
| **Conclusion:** | The teacher evaluates the students by asking them some questions on what they have been taught. |
| **Assignment:** | Find four examples of the use of colour and value:<br>i. subtle use of colour (monochromatic or very little colour)<br>ii. Bold use of colour (bright colour, many colours, etc.)<br>iii. black and white only |

**Experimental Group**
**Week 8**
**Lesson 1**

| | |
|---|---|
| **Subject:** | visual art |
| **Class:** | SSS II |
| **Duration:** | 45 minutes |
| **Period:** | 4th |
| **Average age:** | Age $14^{+}$ |
| **Sex:** | Mixed |
| **Topic:** | colour (as an element of design) |
| **Behavioural Objectives:** | At the end of the lesson, students should be able to:<br>i. locate colour pallets<br>ii. Explain the~~identify~~ characteristics of colours |

iii. Describe the~~specify~~ classes of colours

**Instructional Materials:** computer with CorelDraw application installed on it

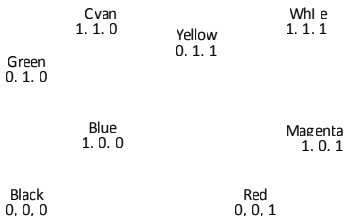
**Previous Knowledge:**

i. the students have been taught how to operate a computer
ii. students know how to locate icons of CorelDraw on the computer
iii. Students launch the application and open a new work space with preferred size.

**Introduction:** He explains further on previous lesson: colour is a powerful and attractive aspect of our experience of the world. It shapes our perception, interpretation, and memory of everything we see

**Presentation:** The lesson is presented in the following steps

**Step I:** With the aid of diagram the teacher explains the colour guides and characteristics




**12 The RGB colour cube.**

the teacher explains further o colour mixtures and how best to

**Step II:**




go about it virtually

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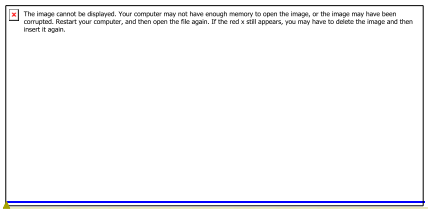
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| **Step III:** | the teacher make a practical example by making some mixtures in the presence of the students on the computer |
| **Summary:** | The teacher summarizes the whole lesson by repeating the whole process again in the presence of the students. |
| **Student activities:** | The teacher lets the students participate in the lesson by allowing them to also pick the draw tools and ask them to identify different colour pallets and how to use them. |
| **Conclusion:** | The teacher evaluates the students by asking them some questions on what they have been taught. |
| **Assignment:** | make a diagram showing colour chain and how best to use them in design using a computer |

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**Experimental Group**
**Week 8**
**Lesson 2**

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|---|---|
| **Subject:** | visual art |
| **Class:** | SSS II |
| **Duration:** | 45 minutes |

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|---|---|
| **Period:** | 4th |
| **Average age:** | Age $14^{+}$ |
| **Sex:** | Mixed |
| **Topic:** | colour (as an element of design) |
| **Behavioural Objectives:** | At the end of the lesson, students should be able to:<br>i. Colour theories<br>ii. Explain colour wheels<br>iii. Define colour ~~hamony~~harmony |
| **Instructional Materials:** | computer with CorelDraw application installed on it |
| **Previous Knowledge:** | iv. the students have been taught how to operate a computer<br>v. students know how to locate icons of CorelDraw on the computer<br>vi. Students launch the application and open a new work space with preferred size. |
| **Introduction:** | Color theory encompasses a multitude of definitions, concepts and design applications - enough to fill several encyclopedias. However, there are three basic categories of color theory that are logical and ~~useful :~~useful: The color wheel, color harmony, and the context of how colors are used. Color theories create a logical structure for color. For example, if we have an assortment of fruits and vegetables, we can organize them by color and place them on a circle that shows the colors in relation to each other. |
| |  |
| **Presentation:** | The lesson is presented in the following steps |
| **Step I:** | The teacher introduce the new topic "**The ~~Color~~Colour Wheel**" to the students. A ~~color~~colour circle, based on red, yellow and blue, is traditional in the field of art. Sir Isaac Newton developed the first circular diagram of ~~colors~~colours in 1666. Since then, scientists and artists have studied and designed numerous variations of this concept. Differences of opinion about the validity of one format over another continue to provoke debate. In reality, any ~~color~~colour circle or |

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~~color~~colour wheel which presents a logically arranged sequence of pure hues has merit




**Step II:**

**Primary Colors**: Red, yellow and blue. In traditional color theory (used in paint and pigments), primary colors are the 3 pigment colors that cannot be mixed or formed by any combination of other colors. All other colors are derived from these 3 hues.
**Secondary Colors**: Green, orange and purple
These are the colors formed by mixing the primary colors.
**Tertiary Colors:** Yellow-orange, red-orange, red-purple, blue-purple, blue-green & yellow-green. These are the colors formed by mixing a primary and a secondary color. That's why the hue is a two word name, such as blue-green, red-violet, and yellow-orange




**Step III:**

~~Color~~Colour Harmony.

Harmony can be defined as a pleasing arrangement of parts, whether it be music, poetry, ~~color~~colour, or even an ice cream sundae.
In visual experiences, harmony is something that is pleasing to the eye. It engages the viewer and it creates an inner sense of order, a balance in the visual experience. When something is not harmonious, it's either boring or chaotic.

**Summary:**

The teacher summarizes the whole lesson by repeating the whole process again in the presence of the students.

**Student activities:**

The teacher lets the students participate in the lesson by allowing them to also pick the draw tools and ask them to identify different colour pallets and how to use them.

**Conclusion:**

The teacher evaluates the students by asking them some questions on what they have been taught.

**Assignment:**

i. What is colour ~~hamony~~harmony
ii. Classes of colours
iii. Explain what you understand by colour wheel
iv. And what is colour theory

**Experimental Group**
**Week 9**
**Lesson 1**

| | |
|---|---|
| **Subject:** | visual art |
| **Class:** | SSS II |
| **Duration:** | 45 minutes |
| **Period:** | 4th |
| **Average age:** | Age $14^{+}$ |
| **Sex:** | Mixed |
| **Topic:** | Fonts (as an element of design) |
| **Behavioural Objectives:** | At the end of the lesson, students should be able to:<br>~~i~~I. Explain what is font<br>ii. list the features of fonts |
| **Instructional Materials:** | computer with CorelDraw application installed on it |
| **Previous Knowledge:** | ~~i~~I. the students have been taught how to operate a computer<br>ii. students know how to locate icons of CorelDraw on the computer<br>iii. Students launch the application and open a new work space with preferred size. |
| **Introduction:** | Font is a group of typefaces that have similar characteristics. |

| | |
|---|---|
| **Presentation:** | The lesson is presented in the following steps |
| **Step I:** | The teacher introduced lesson to the students. There are an overwhelming amount of fonts at our fingertips, but first let's talk about the main categories of fonts out there. There are a lot of great fonts out there, but keep in mind, you get what you pay for. Make sure the font you choose is high quality. |
| **Step II:** | ~~font~~Font change illustrates a key point in the world of design: design can be used to evolve and adapt your brand and to speak volumes about where your brand is going.<br><br>The font itself is quirky, rounded, it emanates friendliness, hence ~~it's~~its popularity |
| **Step III:** | In a digital age, some would argue that Times New Roman can appear old fashioned, or an obvious choice. It needs to be used in the right context, for example would it look good fronting a sports brand?<br><br>~~font~~Font can tell us so much about the businesses around us. |
| **Summary:** | The teacher summarizes the whole lesson by repeating the whole process again in the presence of the students. |
| **Student activities:** | ~~the~~The teacher lets the students participate in the lesson by allowing them to also to identify different types of fonts and how they look like. This is done in order to test their level of understanding. |
| **Conclusion:** | The teacher evaluates the students by asking them some questions on what they have been taught. |
| **Assignment:** | Define fonts and its uses |

**Experimental Group**
**Week 9**
**Lesson 2**

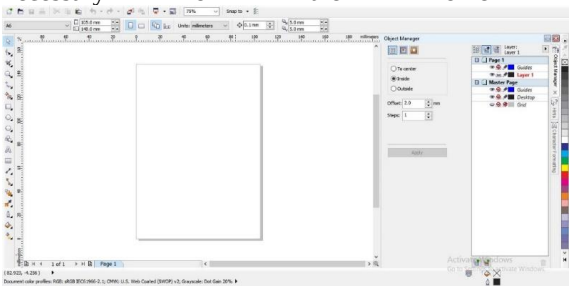
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|---|---|
| **Subject:** | visual art |
| **Class:** | SSS II |
| **Duration:** | 45 minutes |

| | |
|---|---|
| **Period:** | 5th |
| **Average age:** | Age $14^{+}$ |
| **Sex:** | Mixed |
| **Topic:** | Fonts (as an element of design) |
| **Behavioural Objectives:** | At the end of the lesson, students should be able to:<br><br>i. itemise the uses~~Uses~~ of font<br><br>ii. identify different types of fonts |
| **Instructional Materials:** | computer with CorelDraw application installed on it |
| **Previous Knowledge:** | ~~i~~I. the students have been taught how to operate a computer<br><br>ii. students know how to locate icons of CorelDraw on the computer<br><br>iii. Students launch the application and open a new work space with preferred size. |
| **Introduction:** | Font is a group of typefaces that have similar characteristics. Fonts are important in design and they can easily change an intending message depending on how it is been used. |
| **Presentation:** | The lesson is presented in the following steps |
| **Step I:** | The teacher introduces lesson to the students. There are a lot of great fonts out there, but keep in mind, you get what you pay for. Make sure the font you choose is high quality. For a more in-depth look into more typography terminology |
| **Step II:** | Types of fonts<br><br>**Serif:** Serif is the slight projection at the end of a stroke that's most commonly seen at the bottom of letters. If you look closely, some fonts will have "little feet" on them. This is what characterizes it as being a Serif font.<br><br>**Script**: This font type is known for its elegant, light and professional appeal. You often see this kind of font written on wedding invitations, diplomas or certificates. Use this kind of font sparingly. It's not designed to be used as body copy or used in small spaces. |

| | |
|---|---|
| | **Display**: You often see this kind of font on movie posters, newspapers, banners, etc. It's intentionally designed to grab your attention or to give emphasis to a certain area. This is another font that's not meant to be used in large quantities—a little goes a long way.<br><br>**Hand Lettering:** These kinds of fonts have hand rendered characteristics. Maybe they look as if a child has written it, or as if someone used a Sharpie or whiteboard marker to jot something down. Designers like to use fonts like this because they add a human element to the design—something that people can relate to.<br><br>. |
| **Step III:** | ~~font~~Font change illustrates a key point in the world of design: design can be used to evolve and adapt your brand and to speak volumes about where your brand is going.<br><br>The font itself is quirky, rounded, it emanates friendliness, hence ~~it's~~its popularity.<br><br>In a digital age, some would argue that Times New Roman can appear old fashioned, or an obvious choice. It needs to be used in the right context, for example would it look good fronting a sports brand?<br><br>~~font~~Font can tell us so much about the businesses around us. |
| **Summary:** | The teacher summarizes the whole lesson by repeating the whole process again in the presence of the students. |
| **Student activities:** | ~~the~~The teacher lets the students participate in the lesson by allowing them to also to identify different types of fonts and how they look like. This is done in order to test their level of understanding. |
| **Conclusion:** | The teacher evaluates the students by asking them some questions on what they have been taught. |
| **Assignment:** | Define fonts, types and uses |

**Experimental Group**
**Week 10**
**Lesson 1**

| | |
|---|---|
| **Subject:** | visual art |
| **Class:** | SSS II |
| **Duration:** | 45 minutes |
| **Period:** | 4th |
| **Average age:** | Age 14+ |
| **Sex:** | Mixed |
| **Topic:** | Integrating colours, forms, textures, lines, shapes in design |
| **Behavioural Objectives:** | At the end of the lesson, students should be able to:<br>~~i~~I. itemise ~~Know~~ all the basic elements of graphics design<br>ii. explain the~~Know~~ principle of graphics design |
| **Instructional Materials:** | computer with CorelDraw application installed on it |

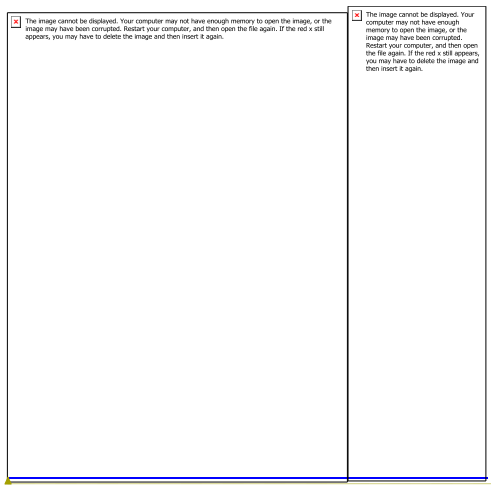
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| **Previous Knowledge:** | ~~i~~I. the students have been taught how to operate a computer<br><br>ii. students know how to locate icons of CorelDraw on the computer<br><br>iii. Students launch the application and open a new work space with preferred size. |
| **Introduction:** | The teacher introduce the new topicIntegrating colours, forms, textures, lines, shapes in design |
| **Presentation:** | The lesson is presented in the following steps |
| **Step I:** | The teacher explains how students can easily navigate on the corel draw application with ease and by identifying necessary on the home page.<br> |
| **Step II:** | The teacher explains basic tool panels<br><br> |
| **Step III:** | The teacher allows students explain what they understand on each of the interface and have an interactive section with the students. |
| **Step iv:** | The teacher makes a practical examples. |
| **Summary:** | The teacher summarizes the whole lesson by repeating the whole process again in the presence of the students |
| **Student activities:** | The teacher lets the students participate in the lesson by allowing them to also identify tools and ask them to identify different types of design tools. |
| **Conclusion:** | the teacher evaluates the students by asking them some questions on what they have been taught |
| **Assignment:** | Name five important tools that are used to design on ~~coreldraw~~CorelDraw. |

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**Experimental Group**

**Week 10**
**Lesson 2**

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|---|---|
| **Subject:** | visual art |
| **Class:** | SSS II |
| **Duration:** | 45 minutes |
| **Period:** | 4th |
| **Average age:** | Age 14+ |
| **Sex:** | Mixed |
| **Topic:** | Integrating colours, forms, textures, lines, shapes in design |
| **Behavioural Objectives:** | At the end of the lesson, students should be able to:<br>i. identify Know all the basic elements of graphics design<br>ii. itemise the Know principle of graphics design |
| **Instructional Materials:** | computer with CorelDraw application installed on it |
| **Previous Knowledge:** | i. the students have been taught how to operate a computer<br>ii. students know how to locate icons of CorelDraw on the computer<br>iii. Students launch the application and open a new work space with preferred size. |
| **Introduction:** | The teacher introduce the new topicIntegrating colours, forms, textures, lines, shapes in design |
| **Presentation:** | The lesson is presented in the following steps |
| **Step I:** | The teacher explains how students can easily navigate on the corel draw application with ease and by identifying necessary on the home page. |
| **Step II:** | The teacher explains basic tool panels |



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| **Step III:** | The teacher allows students explain what they understand on each of the interface and have an interactive section with the students. |
| **Step iv:** | The teacher makes a practical examples. |
| **Summary:** | The teacher summarizes the whole lesson by repeating the whole process again in the presence of the students |
| **Student activities:** | The teacher lets the students participate in the lesson by allowing them to also identify tools and ask them to identify different types of design tools. |
| **Conclusion:** | the teacher evaluates the students by asking them some questions on what they have been taught |
| **Assignment:** | Name five important tools that are used to design. |

**LESSON PLAN FOR CONVENTIONAL TEACHING METHOD**

**Teacher's guide to conventional teaching method**

This is a teaching method that is largely involved in the use of available materials. Class is usually dominated by teachers who literarily manipulates materials that can be sourced to teach the students. This type of class limits the student to what they see around them and what they hear from their teachers. Students are unable to utilize wide range of materials sourced from different areas. It confines students to what they are been taught by the teacher and does not allow them to exhibit their talent and skills to the fullest:

Attention has to be given to the following:

1. Minimal students' interaction
2. Activities are mostly dominated by the teacher, giving only examples, with limited resources.

3. Little opportunity and facilities explored.
4. Time utilization and mistakes

**Conventional group**
**Week 1**
**Lesson 1**

| | |
|---|---|
| **Subject:** | visual art |
| **Class:** | SSS II |
| **Duration:** | 45 minutes |
| **Period:** | $4^{th}$ |
| **Average age:** | Age $14^{+}$ |
| **Sex:** | Mixed |
| **Topic:** | Graphics Design |

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| **Behavioural Objectives:** | At the end of the lesson, students were be able to:<br>v. Define what is graphics design<br>vi.explain~~Know~~ how graphics design relates to visual art |
| **Instructional Materials:** | palette, drawing board, pencils, pen, textured papers, erasers etc. |
| **Previous Knowledge:** | xix. the students have known what visual arts is all about from previous class<br>xx. students are familiar with some elementary art equipment's<br>xxi. Students can make a rough sketch |
| **Introduction:** | The teacher introduce the new topic "what is Graphics Design" to the students. He explains further by giving various definitions of graphics design. |
| **Presentation:** | The lesson was presented in the following steps: |
| **Step I:** | The teacher explains Graphic design is the process and art of combining text and graphics to communicate an effective message in the design of websites, logos, graphics, brochures, newsletters, posters, signs and any other type of visual communication. |
| **Step II:** | The goal of graphics designs is usually to attract the viewers' attention, sometimes to motivate them to take a specific action |
| **Step III:** | The teacher explain how designers draw the viewer's attention to an important art work |
| **Step iv:** | The teacher gave practical examples by showing students different art works on the computer and they all relates to art. |
| **Summary:** | The teacher summarizes the whole lesson by repeating the whole process again in the presence of the students |
| **Student activities:** | The teacher lets the students participate in the lesson by allowing them to contribute on what they know about graphics. |
| **Conclusion:** | the teacher evaluates the students by asking them some questions on what they have been taught |
| **Assignment:** | ~~i~~I. What is graphics design<br>ii. How does it relates to art? |

**Conventional group**
**Week 1**
**Lesson 2**

| | |
|---|---|
| **Subject:** | visual art |
| **Class:** | SSS II |
| **Duration:** | 45 minutes |
| **Period:** | 4th |
| **Average age:** | Age 14+ |
| **Sex:** | Mixed |
| **Topic:** | Graphics Design |
| **Behavioural Objectives:** | At the end of the lesson, students should be able to:<br>i. Itemise ~~Know~~ all the basic elements of graphics design<br>ii. Explain the ~~Know~~ principle of graphics design |
| **Instructional Materials:** | palette, drawing board, pencils, pen, textured papers, erasers etc. |
| **Previous Knowledge:** | i. the students have known what visual arts is all about from previous class<br>ii. students are familiar with some elementary art equipment's<br>iii. Students can make a rough sketch. |
| **Introduction:** | The teacher introduce the new topic "Graphics Design" to the students. He explains further: the basic elements of design are graphic design elements include lines, shapes, texture, value, size, and colour |
| **Presentation:** | The lesson is presented in the following steps |
| **Step I:** | The teacher explains Graphic design is the process and art of combining text and graphics to communicate an effective message in the design, brochures, newsletters, posters, signs and any other type of visual communication. Designers achieve their goals by combining the elements and principles of graphic design. |
| **Step II:** | The teacher explains that Graphic designers for print use some or all of these elements to generate effective designs. The goal is usually to attract the viewers' attention, sometimes to |

motivate them to take a specific action

**Step III:**

The teacher explain Principles of graphic design address ways in which a graphic designer can assemble the individual elements into a cohesive whole. Designers draw the viewer's attention to an important element by placing the important element in the place where the eye naturally falls. Other classic principles of design include the important element in the place where the eye naturally falls. Other classic principles of design include

- **Balance** - Most good graphic designs achieve visual balance by using symmetrical, asymmetrical or radial symmetry about a visual ~~center~~centre. In symmetrical balance, both sides of a page layout are the same in weight, shape, lines and other elements. Asymmetrical balance occurs when the two sides of a website aren't the same but they have similar elements. Radial symmetry places elements in a circular pattern. Although it is popular in print layouts, radial symmetry isn't seen n much on websites because the circular placements are difficult to achieve. Note: Occasionally, a graphic designer will intentionally produce an unbalanced design, usually in an effort to focus attention on a single element.
- **Alignment** - Alignment refers to lining up the elements of a design along the top, bottom, ~~center~~centre or sides of the elements. The aligned elements aren't necessarily of the same type. They are frequently aligned along the left edge of the layout. Different size photos appear as a unit when they are aligned across the top or the bottom.
- **Repetition** - Repetition duplicates the characteristics of similar elements to contribute to design consistency. Repetition can also create rhythm in a design. A series of bulleted points of interest in the same ~~color~~colour, type and size for a complete unit.
- **Proximity** - Proximity maintains a relationship between items that go together. The elements don't have to be positioned closely together but they should be connected visually.
- **Contrast** -Contrast occurs with the juxtaposition of opposing elements—big versus small or dark versus light, for example. Using contrast can highlight important elements of the design. Contrast is easily achieved with ~~color~~colour, but it can also occur with texture, type, and graphic elements.
- **Space** - Space is the part of a design that is left blank. It includes empty space that is intentionally placed within the design and also margins and gutters between other elements, which are usually referred to as passive space. Space in a design adds emphasis to an area of the design

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| | because the eye is strongly drawn to the part of the design that is not empty. Both positive and negative space should be considered in the graphic design.<br>• Lines are used in design and some practical uses of lines in common projects. |
| **Step iv:** | The teacher make a practical examples. |
| **Summary:** | The teacher summarizes the whole lesson by repeating the whole process again in the presence of the students |
| **Student activities:** | The teacher lets the students participate in the lesson by allowing them to make an inscription using the elements of design. |
| **Conclusion:** | the teacher evaluates the students by asking them some questions on what they have been taught |
| **Assignment:** | What are the elements of design?<br><br>What are the principles of design? |

**Conventional Group**
**Week 2**
**Lesson 1**

| | |
|---|---|
| **Subject:** | visual art |
| **Class:** | SSS II |
| **Duration:** | 45 minutes |
| **Period:** | 4th |
| **Average age:** | Age 14+ |
| **Sex:** | Mixed |
| **Topic:** | lines (as an element of design) |
| **Behavioural Objectives:** | At the end of the lesson, students were able to:<br><br>v. Define Lines<br>vi. Explain uses of lines in art |
| **Instructional Materials:** | Palette, drawing board, pencils, pen, textured papers, erasers etc. |
| **Previous Knowledge:** | xxii. the students have known what visual arts is all about from previous class<br>xxiii. students are familiar with some elementary art equipment's |

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| | xxiv. Students can make a rough sketch. |
| **Introduction:** | The teacher introduce the new topic what is lines as an element of design to the students. |
| **Presentation:** | The lesson is presented in the following steps |
| **Step I:** | The teacher demonstrates the lesson to the students on how to use lines in design and how they can aid in the readability, appearance, and message of a design. |
| **Step II:** | The teacher explained the uses of line. You can use lines in conjunction with other elements of your design. Sometimes a designer uses a line alone to divide or unite elements on a page |
| **Step III:** | Lines can denote direction of movement (as in diagonal lines and arrows) or provide an anchor to hold elements on a page (such as lines at the top, bottom, or sides of a page). |
| **Step iv:** | The teacher make a practical example by drawing different types of line with the help of the line tool. He also increases and decreases the size of the lines drawn and performs different functions in the presence of the students. |
| **Summary:** | The teacher summarizes the whole lesson by repeating the whole process again in the presence of the students. |
| **Student activities:** | the teacher lets the students participate in the lesson by allowing them to also pick the draw tools and ask them to identify different types of line to test their level of understanding |
| **Conclusion:** | The teacher evaluates the students by asking them some questions on what they have been taught. |
| **Assignment:** | ~~i~~I. What is lines<br><br>ii. what is the uses of lines |

**Conventional Group**
**Week 2**
**Lesson 2**

| | |
|---|---|
| **Subject:** | visual art |
| **Class:** | SSS II |
| **Duration:** | 45 minutes |

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|---|---|
| **Period:** | 4th |
| **Average age:** | Age 14+ |
| **Sex:** | Mixed |
| **Topic:** | lines (as an element of design) |
| **Behavioural Objectives:** | At the end of the lesson, students should be able to:<br>i. ~~identify and draw~~ different types of lines<br>ii. identify various pens, rulers, objects that c~~b~~an be used to draw different types of lines |
| **Instructional Materials:** | Palette, drawing board, pencils, pen, textured papers, erasers etc. |
| **Previous Knowledge:** | i. the students have known what visual arts is all about from previous class<br>ii. students are familiar with some elementary art equipment's<br>iii. Students can make a rough sketch. |
| **Introduction:** | The teacher introduce the new topic "lines as an element of design" to the students. He explains further: Lines are one of the basic elements of design. Alone or in combination with other lines or shapes they can aid in the readability, appearance, and message of a design. |
| **Presentation:** | The lesson is presented in the following steps. |
| **Step I:** | The teacher demonstrates the lesson to the students on how to use lines in design and tools that can be used to draw lines. |
| **Step II:** | The teacher explains the types of line: Lines can be long or short, straight or curved. Lines can be horizontal, vertical, or diagonal. They create patterns. Lines in graphic design can be solid, dashed, thick, thin, or of variable width. |
| **Step III:** | The teacher explain the uses of line: You can use lines in conjunction with other elements of your design. Sometimes a designer uses a line alone to divide or unite elements on a page. Lines can denote direction of movement (as in diagonal lines and arrows) or provide an anchor to hold elements on a page (such as lines at the top, bottom, or sides of a page).<br>• Organize |

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- Texture
- Guide the eye
- Provide movement
- Make a statement
- Convey universal meaning

**Step iv:** The teacher make a practical examples.

**Summary:** The teacher summarizes the whole lesson by repeating the whole process again in the presence of the students

**Student activities:** The teacher lets the students participate in the lesson by allowing them to draw different types of line to test their level of understanding.

**Conclusion:** the teacher evaluates the students by asking them some questions on what they have been taught

**Assignment:** The teacher gives them assignment to go and find as many as possible different examples of lines of all kinds. Find examples of each of these six types of lines:

1. horizontal lines
2. vertical lines
3. diagonal lines
4. curved or freeform lines
5. lines used in a pattern
6. non-solid (dashed, dotted, etc.) lines

**Conventional Group**
**Week 3**
**Lesson 1**

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|---|---|
| **Subject:** | visual art |
| **Class:** | SSS II |
| **Duration:** | 45 minutes |
| **Period:** | 8th |
| **Average age:** | Age 14+ |
| **Sex:** | Mixed |
| **Topic:** | lines (as an element of design) |
| **Behavioural Objectives:** | At the end of the lesson, students were able to:<br>vi. describe ~~identify~~ variations of Lines<br>vii. ~~How to~~ Recognise line tools computers<br>viii. ~~How to~~ Draw lines on computers |
| **Instructional Materials:** | Palette, drawing board, pencils, pen, textured papers, erasers etc. |
| **Previous Knowledge:** | xxv. the students have known what visual arts is all about from previous class<br>xxvi. students are familiar with some elementary art equipment's<br>xxvii. Students can make a rough sketch. |
| **Introduction:** | The teacher introduce the new topic "lines as an element of design" to the students. He explains further by showing the students line tools |
| **Presentation:** | The lesson is presented in the following steps |

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| **Step I:** | The teacher demonstrates the lesson to the students on Variations of Lines<br><br>Lines come in many varieties. They may:<br><br>• be long, short or anything in between<br>• be thick, thin<br>• be smooth or rough<br>• be continuous, implied, dotted, dashed<br>• change direction<br>• change in degree of curve (curved Lines)<br>• be any of the above combined |
| **Step II:** | The teacher make an outline; a starting place for many drawings or paintings. |
| **Step III:** | Teachers explains how lines can be drawn on a computer. |
| **Summary:** | The teacher summarizes the whole lesson by repeating the whole process again in the presence of the students. |
| **Student activities:** | the teacher lets the students participate in the lesson by allowing them to pick their drawing kits and ask them to identify different types of line to test their level of understanding |
| **Conclusion:** | The teacher evaluates the students by asking them some questions on what they have been taught. |
| **Assignment:** | ~~draw~~DrawCommon types of lines and explain their uses. |

**Conventional Group**
**Week 3**
**Lesson 2**

| | |
|---|---|
| **Subject:** | visual art |
| **Class:** | SSS II |
| **Duration:** | 45 minutes |
| **Period:** | 4th |
| **Average age:** | Age $14^{+}$ |
| **Sex:** | Mixed |
| **Topic:** | lines (as an element of design) |

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| **Behavioural Objectives:** | At the end of the lesson, students should be able to:<br><br>ix. identify variations of Lines<br>x. describe~~identify~~ Some Ways Artists Use Line |
| **Instructional Materials:** | Palette, drawing board, pencils, pen, textured papers, erasers etc. |
| **Previous Knowledge:** | i. the students have known what visual arts is all about from previous class<br>ii. students are familiar with some elementary art equipment's<br>Students can make a rough sketch |
| **Introduction:** | The teacher introduce the new topic "lines as an element of design" to the students. He explains further: Lines are one of the basic elements of design. Alone or in combination with other lines or shapes they can aid in the readability, appearance, and message of a design. |
| **Presentation:** | The lesson is presented in the following steps |
| **Step I:** | The teacher demonstrates the lesson to the students on Variations of Lines<br><br>Lines come in many varieties. They may:<br><br>• be long, short or anything in between<br>• be thick, thin<br>• be smooth or rough<br>• be continuous, implied, dotted, dashed<br>• change direction<br>• change in degree of curve (curved Lines)<br>• be any of the above combined |
| **Step II:** | The teacher make an outline; a starting place for many drawings or paintings<br><br>• ~~to~~To suggest moods or emotion; lines can appear calm, nervous, angry, etc.<br>• to lead the ~~viewers~~viewer's eye through a work of art<br>• to create lightness or darkness; lines placed close together appear darker than those placed further from each other<br>• to create texture; roughness or smoothness |

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| **Step III:** | Common types of line drawings<br>• **contour line drawing;** drawings that use a fairly continuous line to represent the edges and surface detail of shape or objects being drawn<br>• **Gestural line drawing;** drawings that use quick pencil strokes (or other drawing instruments) to capture a scene. gestural drawings imply action and movement<br>• **Hatched and cross hatched line drawing;** drawings that consist or parallel lines (hatching) or crossing parallel lines (cross-hatching) drawn to create changes in lightness and darkness and texture. |
| **Summary:** | The teacher summarizes the whole lesson by repeating the whole process again in the presence of the students. |
| **Student activities:** | the teacher lets the students participate in the lesson by allowing them to also pick the draw tools and ask them to identify different types of line to test their level of understanding |
| **Conclusion:** | The teacher evaluates the students by asking them some questions on what they have been taught. |
| **Assignment:** | draw Common types of lines and explain their uses |

**Conventional Group**
**Week 4**
**Lesson 1**

| | |
|---|---|
| **Subject:** | visual art |
| **Class:** | SSS II |
| **Duration:** | 45 minutes |
| **Period:** | 4th |
| **Average age:** | Age 14+ |
| **Sex:** | Mixed |
| **Topic:** | shapes (as an element of design) |
| **Behavioural Objectives:** | At the end of the lesson, students were able to:<br>v. define shapes<br>vi. Explain uses of shapes |
| **Instructional Materials:** | palette, drawing board, pencils, pen, papers, erasers ~~etc~~etc. |
| **Previous Knowledge:** | xxviii. the students know what shapes are<br>xxix. students know how to draw different shapes<br>xxx. students know the names of different shapes |
| **Introduction:** | The teacher introduced the new topic "shapes as an element of design" to the students. He explains further: Lines are one of the basic elements of design. Alone or in combination with other lines or shapes they can aid in the readability, appearance, and message of a design. |
| **Presentation:** | The lesson is presented in the following steps |
| **Step I:** | The teacher introduced lesson to the students on its most basic form, a shape is created when a line is enclosed. |
| **Step II:** | Line and shape are two elements in art that are nearly always used together and they are used to formshapes. |

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| **Step III:** | The teacher explained the uses of shapes: Using shapes properly is one of the keys to successful graphic design. The form, colour, size and other characteristics for the shapes in a layout can determine its mood and message. Soft, curved and rounded shapes are perceived differently than sharp, angled shapes. The "white space" or negative space left between shapes will also significantly impact a design. Experimentation and altering of shapes within a design can ultimately lead to the desired result |
| **Summary:** | The teacher summarizes the whole lesson by repeating the whole process again in the presence of the students. |
| **Student activities:** | the teacher lets the students participate in the lesson by allowing them to draw ~~shapesand~~shapes and ask them to identify different types of shapes to test their level of understanding |
| **Conclusion:** | The teacher evaluates the students by asking them some questions on what they have been taught. |
| **Assignment:** | What are the uses of shapes on design and what makes up shapes |

**Conventional Group**
**Week 4**
**Lesson 2**

| | |
|---|---|
| **Subject:** | visual art |
| **Class:** | SSS II |
| **Duration:** | 45 minutes |
| **Period:** | 4th |
| **Average age:** | Age 14+ |
| **Sex:** | Mixed |
| **Topic:** | shapes (as an element of design) |
| **Behavioural Objectives:** | At the end of the lesson, students were able to:<br>vii. List types of shapes and<br>viii. Explain how it relates to other elements of art |
| **Instructional Materials:** | palette, drawing board, pencils, pen, papers, erasers etc. |

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| **Previous Knowledge:** | i.the students know what shapes are<br>ii. students know how to draw different shapes<br>students know the names of different shapes |
| **Introduction:** | The teacher introduced the new topic "shapes as an element of design" to the students. He explains further: Alone or in combination with other lines or shapes they can aid in the readability, appearance, and message of a design. |
| **Presentation:** | The lesson is presented in the following steps |
| **Step I:** | The teacher introduced lesson to the students on its most basic form, a shape is created when a line is enclosed. Line and shape are two elements in art that are nearly always used together. |
| **Step II:** | how shapes are formed<br><br>**Geometric shapes** are those that are defined in mathematics and have common names. They have clear edges or boundaries and we use tools to create them. Shapes in this category include circles, rectangles, triangles, polygons, and so on.<br><br>**Organic shapes** have no names, no defined angles, and no standards, they are simply organic. They can often be found in nature, such as a cloud or a leaf, and artists rely endlessly on organic shapes in their work |
| **Step III:** | The teacher showed the students different types of shapes on the computer and draws it for the students to see and learn. |
| **Summary:** | The teacher summarizes the whole lesson by repeating the whole process again in the presence of the students. |
| **Student activities:** | the teacher lets the students participate in the lesson by allowing them to also pick the shape tools and ask them to identify different types of shapes to test their level of understanding |
| **Conclusion:** | The teacher evaluates the students by asking them some questions on what they have been taught. |
| **Assignment:** | Find examples of each of these five shapes:<br><br>4. square (not-rectangle) graphic element<br>5. square (not-rectangle) text block |

**Conventional Group**
**Week 5**
**Lesson 1**

| | |
|---|---|
| **Subject:** | visual art |
| **Class:** | SSS II |
| **Duration:** | 45 minutes |
| **Period:** | 4th |
| **Average age:** | Age 14+ |
| **Sex:** | Mixed |
| **Topic:** | texture (as an element of design) |
| **Behavioural Objectives:** | At the end of the lesson, studentd were able to:<br>i. explain what is textures |

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| | ii. itemize the uses of textures |
| **Instructional Materials:** | palette, drawing board, pencils, pen, papers, erasers etc. |
| **Previous Knowledge:** | xvi.Students have seen papers with different patterns<br>xvii. Students know different textures from other subjects and life experience. |
| **Introduction:** | The teacher introduce the new topic "texture as an element of design" to the students.Texturegives a sense of a tactile surface through its visual appearance and adds a sense of depth, enhanced by selection of appropriate paper and material. |
| **Presentation:** | The lesson is presented in the following steps |
| **Step I:** | The teacher introduced lesson to the students. Textures are backgrounds that simulate artworks. |
| **Step II:** | visual texture (simulated fabric, stone, or even water etc. Printed on the paper) certain printing and finishing techniques such as thermography, embossing, or spot varnish can add both actual and visual textures to a printed piece. |
| **Step III:** | Uses of texture In Design: Textures can be used, especially as backgrounds that simulate familiar fabrics, stone, and other textures to create a meaningful design. |
| **Summary:** | The teacher summarizes the whole lesson by repeating the whole process again in the presence of the students. |
| **Student activities:** | the teacher lets the students participate in the lesson by allowing them to also to identify different types of textures and how to source for them. This is done in order to test their level of understanding. |
| **Conclusion:** | The teacher evaluates the students by asking them some questions on what they have been taught. |
| **Assignment:** | What do you understand by the word texture and is it used for? |

**Conventional Group**
**Week 6**
**Lesson 2**

| | |
|---|---|
| **Subject:** | visual art |
| **Class:** | SSS II |
| **Duration:** | 45 minutes |
| **Period:** | $4^{th}$ |
| **Average age:** | Age $14^{+}$ |
| **Sex:** | Mixed |
| **Topic:** | texture (as an element of design) |
| **Behavioural Objectives:** | At the end of the lesson, students were able to:<br>i. identify textures<br>ii. source different forms of textures<br>iii. describe how it relates to other elements of art |
| **Instructional Materials:** | palette, drawing board, pencils, pen, papers, erasers etc. |

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| **Previous Knowledge:** | i. Students have seen papers with different patterns<br>ii. Students know different textures from other subjects and life experience. |
| **Introduction:** | The teacher continues on the topic texture as an element of design" to the students.Texturegives a sense of a tactile surface through its visual appearance and adds a sense of depth, enhanced by selection of appropriate paper and material. |
| **Presentation:** | The lesson is presented in the following steps |
| **Step I:** | The teacher introduced lesson to the students. For desktop publishing, actual texture is the feel of the paper. Is it smooth to the touch or rough? |
| **Step II:** | Visual texture (simulated fabric, stone, or even water etc. Printed on the paper) certain printing and finishing techniques such as thermography, embossing, or spot varnish can add both actual and visual textures to a printed piece. |
| **Step III:** | The teacher made practical examples of the application of textures to the students. |
| **Summary:** | The teacher summarizes the whole lesson by repeating the whole process again in the presence of the students. |
| **Student activities:** | the teacher lets the students participate in the lesson by allowing them to also to identify different types of textures and how to source for them. |
| **Conclusion:** | The teacher evaluates the students by asking them some questions on what they have been taught. |
| **Assignment:** | Sort for different textures from your environment |

**Conventional Group**
**Week 6**
**Lesson 1**

| | |
|---|---|
| **Subject:** | visual art |
| **Class:** | SSS II |
| **Duration:** | 45 minutes |
| **Period:** | 4th |
| **Average age:** | Age $14^{+}$ |
| **Sex:** | Mixed |
| **Topic:** | texture (as an element of design) |
| **Behavioural Objectives:** | At the end of the lesson, students should be able to:<br>i. understand and create<br>ii. Apply variety of texture |
| **Instructional Materials:** | paper with different textures and patterns |
| **Previous Knowledge:** | i. the students have been taught how to operate a computer<br>iii. students know how to locate icons of CorelDraw on the computer<br>iii. Students launch the application and open a new work space with preferred size. |

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| **Introduction:** | The teacher introduces the new topic "texture as an element of design" to the students.Texturegives a sense of a tactile surface through its visual appearance and adds a sense of depth, enhanced by selection of appropriate paper and material. |
| **Presentation:** | The lesson is presented in the following steps |
| **Step I:** | The teacher introduces lesson to the students. The students will create an outline picture by laying at the background a texture to fit in. |
| **Step II:** | Students learn visual texture (simulated fabric, stone, or even water etc. Printed on the paper) certain printing and finishing techniques such as thermography, embossing, or spot varnish can add both actual and visual textures to a printed piece. |
| **Step III:** | the teacher make a practical example by selecting different types of textures. |
| **Summary:** | The teacher summarizes the whole lesson by repeating the whole process again in the presence of the students. |
| **Student activities:** | The teacher lets the students participate in the lesson by allowing them to make different types of texture for different things that come to their minds. |
| **Conclusion:** | The teacher evaluates the students by asking them some questions on what they have been taught. |
| **Assignment:** | Design different textures from leafs, leathers, grass and house |

**Conventional Group**
**Week 6**
**Lesson 2**

| | |
|---|---|
| **Subject:** | visual art |
| **Class:** | SSS II |
| **Duration:** | 45 minutes |
| **Period:** | $4^{th}$ |
| **Average age:** | Age $14^{+}$ |
| **Sex:** | Mixed |
| **Topic:** | texture (as an element of design) |
| **Behavioural Objectives:** | At the end of the lesson, students were able to:<br>i. Express visual ideas<br>ii. Create and source different textures on computer |
| **Instructional Materials:** | paper with different textures and patterns and different textured materials |
| **Previous Knowledge:** | i. the students have been taught how to operate a computer<br>ii. students know how to locate icons of CorelDraw on the computer<br>iii. Students launch the application and open a new work space with preferred size. |
| **Introduction:** | The teacher continued the topic "texture as an element of design" to the students. |
| **Presentation:** | The lesson is presented in the following steps |

| | |
|---|---|
| **Step I:** | The teacher draws various boxes and makes forms to create textures, |
| **Step II:** | Students participated by drawing whatever comes to their mind and making use of them to form textures for design |
| **Step III:** | the teacher make a practical example by selecting different types of texture |
| **Summary:** | The teacher summarizes the whole lesson by repeating the whole process again in the presence of the students. |
| **Student activities:** | The teacher lets the students participate in the lesson by allowing them to make different types of texture for different things that come to their minds. |
| **Conclusion:** | The teacher evaluates the students by asking them some questions on what they have been taught. |
| **Assignment:** | Design different textures from leafs, leathers, grass and house. |

**Conventional Group**
**Week 7**
**Lesson 1**

| | |
|---|---|
| **Subject:** | visual art |
| **Class:** | SSS II |
| **Duration:** | 45 minutes |
| **Period:** | 5th |
| **Average age:** | Age $14^{+}$ |
| **Sex:** | Mixed |
| **Topic:** | colour (as an element of design) |
| **Behavioural Objectives:** | At the end of the lesson, students should be able to:<br>i. define~~What is~~ colour<br>ii. Explain functions of colour |
| **Instructional Materials:** | Poster colours, palette, drawing board, pencils, pen, papers, erasers etc |
| **Previous Knowledge:** | i. students can identify different types of colour<br>ii. students can make a rough painting of an object |
| **Introduction:** | Colour is everywhere. Every single piece in the samples you've collected so far, even if it is black and white, exhibits the element of colour. |
| **Presentation:** | The lesson is presented in the following steps |
| **Step I:** | Colour is used to attract attention. It can be subtle or bold. Colour can be found in the paper, the text, or the graphic elements and photos. |
| **Step II:** | The teacher presents the lesson to the students on how to use colours in design. A monochromatic colour scheme uses a single colour, perhaps in various tints, while other layouts utilize combinations of two, three, or more colours. |

| | |
|---|---|
| **Step III:** | The teacher explains the features of Colour as what elicit specific emotions and reactions. Red is typically thought of as an attention-grabbing, hot colour. Blues are more calming or convey stability. |
| **Summary:** | The teacher summarizes the whole lesson by repeating the whole process again in the presence of the students. |
| **Student activities:** | The teacher lets the students participate in the lesson by allowing them to also to identify different types of colours, mix and how to source for them. This is done in order to test their level of understanding. |
| **Conclusion:** | The teacher evaluates the students by asking them some questions on what they have been taught. |
| **Assignment:** | Explain what you understand by the word colour |

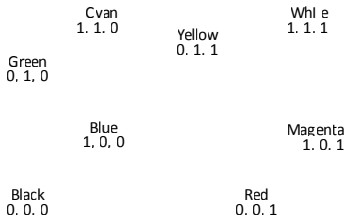
**Conventional Group**
**Week 7**
**Lesson 2**

| | |
|---|---|
| **Subject:** | visual art |
| **Class:** | SSS II |
| **Duration:** | 45 minutes |
| **Period:** | 5th |
| **Average age:** | Age $14^{+}$ |
| **Sex:** | Mixed |
| **Topic:** | colour (as an element of design) |
| **Behavioural Objectives:** | At the end of the lesson, students were~~should~~ be able to:<br>i. Identify colours<br>ii. describe the uses of colours<br>iii. identify and mix different types of colours |
| **Instructional Materials:** | Poster colours, palette, drawing board, pencils, pen, papers, erasers etc. |
| **Previous Knowledge:** | i. students can identify different types of colour<br>ii. students can make a rough painting of an object |
| **Introduction:** | The continues from the previous lesson on what is colour |
| **Presentation:** | The lesson is presented in the following steps |
| **Step I:** | The teacher introduces lesson to the students. The students will create an outline picture by using the pen tool. Partition the picture into many sections. |
| **Step II:** | The teacher presents the lesson to the students on how to use colours in design and how to locate colour tool on a computer. |
| **Step III:** | Uses of colour: Colour can be used to elicit specific emotions and reactions. Colour provides cues for the reader. |
| **Summary:** | The teacher summarizes the whole lesson by repeating the whole process again in the presence of the students. |
| **Student activities:** | The teacher lets the students participate in the lesson by allowing them to also to identify different types of colours, mix and how to source for them. This is done in order to test their level of understanding. |

| | |
|---|---|
| **Conclusion:** | The teacher evaluates the students by asking them some questions on what they have been taught. |
| **Assignment:** | Find four examples of the use of colour and value:<br>iv. subtle use of colour (monochromatic or very little colour)<br>v. Bold use of colour (bright colour, many colours, etc.)<br>vi. black and white only |

**Conventional Group**
**Week 8**
**Lesson 1**

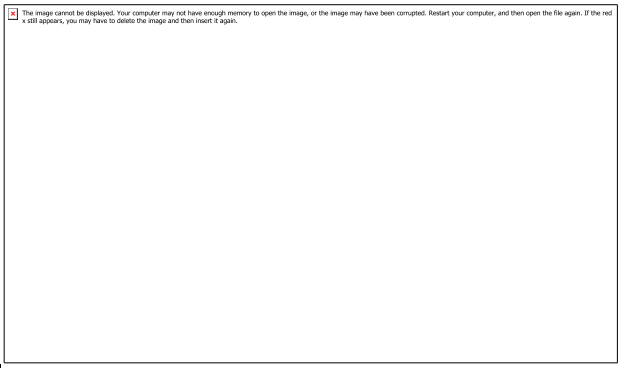
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|---|---|
| **Subject:** | visual art |
| **Class:** | SSS II |
| **Duration:** | 45 minutes |
| **Period:** | 4th |
| **Average age:** | Age $14^{+}$ |
| **Sex:** | Mixed |
| **Topic:** | colour (as an element of design) |
| **Behavioural Objectives:** | At the end of the lesson, students were able to:<br>i. locate colour pallets<br>ii. identify characteristics of colours<br>iii. specify classes of colours |
| **Instructional Materials:** | Poster colours, palette, drawing board, pencils, pen, papers, erasers etc |
| **Previous Knowledge:** | vii. Students can identify different types of colour.<br>viii. Students can make a rough painting of an object |
| **Introduction:** | He explains further on previous lesson: colour is a powerful and attractive aspect of our experience of the world. It shapes our perception, interpretation, and memory of everything we see |
| **Presentation:** | The lesson is presented in the following steps |
| **Step I:** | With the aid of diagram the teacher explains the colour guides and characteristics |




**12 The RGB colour cube.**

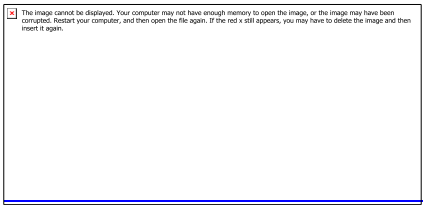
the teacher explains further o colour mixtures and how best to go about it virtually

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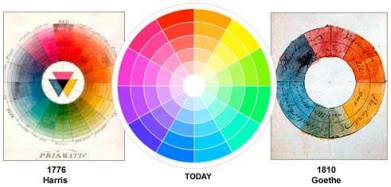
| | |
|---|---|
| **Step II:** | |
| **Step III:** | the teacher make a practical example by making some mixtures in the presence of the students. |
| |  |
| **Summary:** | The teacher summarizes the whole lesson by repeating the whole process again in the presence of the students. |
| **Student activities:** | The teacher lets the students participate in the lesson by allowing them to also pick the draw tools and ask them to identify different colour pallets and how to use them. |
| **Conclusion:** | The teacher evaluates the students by asking them some questions on what they have been taught. |
| **Assignment:** | make a diagram showing colour chain and how best to use them in design on a cardboard paper |

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**Conventional Group**
**Week 8**
**Lesson 2**

| | |
|---|---|
| **Subject:** | visual art |
| **Class:** | SSS II |
| **Duration:** | 45 minutes |
| **Period:** | 4th |
| **Average age:** | Age $14^{+}$ |
| **Sex:** | Mixed |
| **Topic:** | colour (as an element of design) |
| **Behavioural Objectives:** | At the end of the lesson, students were~~should~~ be able to:<br>i.define Colour theories<br>ii. Explain colour wheels<br>iii.describe~~Define~~ colour hamony |
| **Instructional Materials:** | Poster colours, palette, drawing board, pencils, pen, papers, erasers etc |
| **Previous Knowledge:** | i. Students can identify different types of colour.<br>ii.Students can make a rough painting of an object |
| **Introduction:** | Color theory encompasses a multitude of definitions, concepts and design applications - enough to fill several encyclopedias. However, there are three basic categories of color theory that are logical and useful: The color wheel, color harmony, and the context of how colors are used. Color theories create a logical structure for color. For example, if we have an assortment of fruits and vegetables, we can organize them by color and place them on a circle that shows the colors in relation to each other.<br><br>The image cannot be displayed. Your computer may not have enough memory to open the image, or the image may have been corrupted. Restart your computer, and then open the file again. If the red x still appears, you may have to delete the image and then insert it again. |
| **Presentation:** | The lesson is presented in the following steps |
| **Step I:** | The teacher introduce the new topic"The Color Wheel" to the students. A color circle, based on red, yellow and blue, is traditional in the field of art. Sir Isaac Newton developed the first circular diagram of colors in 1666. Since then, scientists and artists have studied and designed numerous variations of this concept. Differences of opinion about the validity of one format over another continue to provoke debate. In reality, any color circle or color wheel which presents a logically arranged sequence of pure hues has merit |

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**Step II:**

**Primary Colors**: Red, yellow and blue. In traditional color theory (used in paint and pigments), primary colors are the 3 pigment colors that cannot be mixed or formed by any combination of other colors. All other colors are derived from these 3 hues.

**Secondary Colors**: Green, orange and purple

These are the colors formed by mixing the primary colors.

**Tertiary Colors:** Yellow-orange, red-orange, red-purple, blue-purple, blue-green & yellow-green. These are the colors formed by mixing a primary and a secondary color. That's why the hue is a two word name, such as blue-green, red-violet, and yellow-orange




**Step III:**

Color Harmony.

Harmony can be defined as a pleasing arrangement of parts, whether it be music, poetry, color, or even an ice cream sundae.

In visual experiences, harmony is something that is pleasing to the eye. It engages the viewer and it creates an inner sense of order, a balance in the visual experience. When something is not harmonious, it's either boring or chaotic.

**Summary:**

The teacher summarizes the whole lesson by repeating the whole process again in the presence of the students.

**Student activities:**

The teacher lets the students participate in the lesson by allowing them to also pick the draw tools and ask them to identify different colour pallets and how to use them.

**Conclusion:**

The teacher evaluates the students by asking them some questions on what they have been taught.

**Assignment:**

i. What is colour hamony
ii. Classes of colours
iii. Explain what you understand by colour wheel
iv. And what is colour theory

**Conventional Group**
**Week 9**
**Lesson 1**

| | |
|---|---|
| **Subject:** | visual art |
| **Class:** | SSS II |
| **Duration:** | 45 minutes |
| **Period:** | 4th |
| **Average age:** | Age $14^{+}$ |
| **Sex:** | Mixed |
| **Topic:** | Fonts (as an element of design) |
| **Behavioural Objectives:** | At the end of the lesson, students should be able to:<br>i. Explain what is font<br>ii. describe the features of fonts |
| **Instructional Materials:** | Colour, palette, drawing board, pencils, pen, papers, erasers etc |
| **Previous Knowledge:** | i. students can explain what is fonts<br>ii. uses of fonts and identify different types of fonts |
| **Introduction:** | Font is a group of typefaces that have similar characteristics. |
| **Presentation:** | The lesson is presented in the following steps |
| **Step I:** | The teacher introduced lesson to the students. There are an overwhelming amount of fonts at our fingertips, but first let's talk about the main categories of fonts out there. There are a lot of great fonts out there, but keep in mind, you get what you pay for. Make sure the font you choose is high quality. |
| **Step II:** | font change illustrates a key point in the world of design: design can be used to evolve and adapt your brand and to speak volumes about where your brand is going.<br>The font itself is quirky, rounded, it emanates friendliness, hence it's popularity |
| **Step III:** | In a digital age, some would argue that Times New Roman can appear old fashioned, or an obvious choice. font can tell us so much about the businesses around us. |
| **Summary:** | The teacher summarizes the whole lesson by repeating the whole process again in the presence of the students. |
| **Student activities:** | the teacher lets the students participate in the lesson by allowing them to also to identify different types of fonts and how they look like. This is done in order to test their level of understanding. |
| **Conclusion:** | The teacher evaluates the students by asking them some questions on what they have been taught. |
| **Assignment:** | Define fonts and its uses |

**Conventional Group**
**Week 9**
**Lesson 2**

| | |
|---|---|
| **Subject:** | visual art |
| **Class:** | SSS II |
| **Duration:** | 45 minutes |
| **Period:** | 5th |
| **Average age:** | Age $14^{+}$ |
| **Sex:** | Mixed |
| **Topic:** | Fonts (as an element of design) |
| **Behavioural Objectives:** | At the end of the lesson, students should be able to:<br>i. explain the uses~~Uses~~ of font<br>ii. identify different types of fonts |
| **Instructional Materials:** | Colour, palette, drawing board, pencils, pen, papers, erasers etc |
| **Previous Knowledge:** | i. students can explain what is fonts<br>ii. uses of fonts and<br>iii. identify different types of fonts |
| **Introduction:** | Font is a group of typefaces that have similar characteristics. Fonts are important in design and they can easily change an intending message depending on how it is been used. |
| **Presentation:** | The lesson is presented in the following steps |
| **Step I:** | The teacher introduces lesson to the students. There are a lot of great fonts out there, but keep in mind, you get what you pay for. Make sure the font you choose is high quality. For a more in-depth look into more typography terminology |
| **Step II:** | Types of fonts<br>**Serif:** Serif is the slight projection at the end of a stroke that's most commonly seen at the bottom of letters. If you look closely, some fonts will have "little feet" on them. This is what characterizes it as being a Serif font.<br>**Script**: This font type is known for its elegant, light and professional appeal. You often see this kind of font written on wedding invitations, diplomas or certificates. Use this kind of font sparingly. It's not designed to be used as body copy or used in small spaces.<br>**Display**: You often see this kind of font on movie posters, newspapers, banners, etc. It's intentionally designed to grab your attention or to give emphasis to a certain area. This is another font that's not meant to be used in large quantities—a little goes a long way.<br>**Hand Lettering:** These kinds of fonts have hand rendered characteristics. Maybe they look as if a child has written it, or as if someone used a Sharpie or whiteboard marker to jot something down. Designers like to use fonts like this because they add a human element to the design—something that |

| | |
|---|---|
| | people can relate to.<br>. |
| **Step III:** | font change illustrates a key point in the world of design: design can be used to evolve and adapt your brand and to speak volumes about where your brand is going.<br>The font itself is quirky, rounded, it emanates friendliness, hence it's popularity.<br>In a digital age, some would argue that Times New Roman can appear old fashioned, or an obvious choice. It needs to be used in the right context, for example would it look good fronting a sports brand?<br>font can tell us so much about the businesses around us. |
| **Summary:** | The teacher summarizes the whole lesson by repeating the whole process again in the presence of the students. |
| **Student activities:** | the teacher lets the students participate in the lesson by allowing them to also to identify different types of fonts and how they look like. This is done in order to test their level of understanding. |
| **Conclusion:** | The teacher evaluates the students by asking them some questions on what they have been taught. |
| **Assignment:** | Define fonts, types and uses |

**Conventional Group**
**Week 10**
**Lesson 1**

| | |
|---|---|
| **Subject:** | visual art |
| **Class:** | SSS II |
| **Duration:** | 45 minutes |
| **Period:** | 4th |
| **Average age:** | Age 14+ |
| **Sex:** | Mixed |
| **Topic:** | Integrating colours, forms, textures, lines, shapes in design |
| **Behavioural Objectives:** | At the end of the lesson, students were~~should be~~ able to:<br>i. describe~~Know~~ all the basic elements of graphics design<br>ii. explain the ~~Know~~ principle of graphics design |
| **Instructional Materials:** | Colours, palette, drawing board, pencils, pen, papers, erasers etc. |
| **Previous Knowledge:** | i. Students already know all elements of design<br>ii. It's application and characteristics iii. Students launch the application and open a new work space with preferred size. |
| **Introduction:** | The teacher introduce the new topicIntegrating colours, forms, textures, lines, shapes in design |
| **Presentation:** | The lesson is presented in the following steps |
| **Step I:** | The teacher explains how students can easily make a design on a cardboard or sheet of paper |
| **Step II:** | The teacher allows students explain what they understand |
| **Step III:** | The teacher allows students explain what they understand on each of the interface and have an interactive section with the students. |
| **Step iv:** | The teacher makes a practical examples. |
| **Summary:** | The teacher summarizes the whole lesson by repeating the whole process again in the presence of the students |
| **Student activities:** | The teacher lets the students participate in the lesson by allowing them to also identify tools and ask them to identify different types of design tools. |
| **Conclusion:** | the teacher evaluates the students by asking them some questions on what they have been taught |
| **Assignment:** | Name five important tools that are used to design |

**Conventional Group**
**Week 10**
**Lesson 2**

| | |
|---|---|
| **Subject:** | visual art |
| **Class:** | SSS II |
| **Duration:** | 45 minutes |
| **Period:** | 4th |
| **Average age:** | Age 14+ |
| **Sex:** | Mixed |
| **Topic:** | Integrating colours, forms, textures, lines, shapes in design |
| **Behavioural Objectives:** | At the end of the lesson, students were ~~should be~~ able to:<br>i. describe~~Know~~ all the basic elements of graphics design<br>ii. itemise the ~~Know~~ principle of graphics design |
| **Instructional Materials:** | Colours, palette, drawing board, pencils, pen, papers, erasers etc. |
| **Previous Knowledge:** | iii. Students already know all elements of design<br>iv. It's application and characteristics iii. Students launch the application and open a new work space with preferred size. |
| **Introduction:** | The teacher introduce the new topicIntegrating colours, forms, textures, lines, shapes in design |
| **Presentation:** | The lesson is presented in the following steps |
| **Step I:** | The teacher explains how students can easily make a design on a cardboard or sheet of paper |
| **Step II:** | The teacher allows students explain what they understand |
| **Step III:** | The teacher allows students explain what they understand on each of the interface and have an interactive section with the students. |
| **Step iv:** | The teacher makes a practical examples. |
| **Summary:** | The teacher summarizes the whole lesson by repeating the whole process again in the presence of the students |
| **Student activities:** | The teacher lets the students participate in the lesson by allowing them to also identify tools and ask them to identify different types of design tools. |
| **Conclusion:** | the teacher evaluates the students by asking them some questions on what they have been taught |
| **Assignment:** | Name five important tools that are used to design |

## Appendix C

## TEST INSTRUMENT

### VISUAL PERFORMANCE TEST (VAPT)

**Demographic Characteristics of the Respondents**

1. Sex: a. Male ( ) b. Female ( )

2. Age in years: a. 10 -12 years ( ) b. 13 - 15 years ( )

c. 15 -17 years ( )

This paper consist of two questions, A and B. Candidates are to answer one question only.

Instruments and tracing paper, colours and brushes are allowed for traditional method and computers, printers is allowed for treatment group.

**Time:** 3:00 hours

Both questions carry equal mark.

1. In other to stop the spread the spread of cholera in your country, the national association of Public Health Physician is embarking on a campaign for improved sanitation.
   Design a pictorial poster for the campaign incorporating the slogan:
   ***LIVE CLEAN LIVE WELL***
   Colours: Not more than three
   Size: 15 *cm* by 23 *cm*
2. The ministry of culture in your country is launching a campaign to promote national culture through dress.
   Design a pictorial poster for the campaign incorporating the slogan:

   ***PROUDLY AFRICAN***

   Colours: Not more than three
   Size: 15 *cm* by 23 *cm*

## Appendix D

**VISUAL PERFORMANCE TEST (VAPT)**

**Marking Scheme**

| Criteria | Marks |
|---|---|
| The source material or design is interpreted in sophisticated and well-reasoned ways | 30 |
| Colour choice reflects mood, symbolism, place | 20 |
| Relationships between text and image | 20 |
| Demonstrates a well-developed understanding of how time and place inform artworks | 10 |
| The source material is used in a limited way | 10 |
| Provides some relevant information<br>The source material may be referred to | 10 |
| **TOTAL** | **100** |

## Appendix E

Photographs of Field Experience






Researcher interacting with the students in the experimental group

**Appendix F**

**Designs produced by Experimental Group of students**



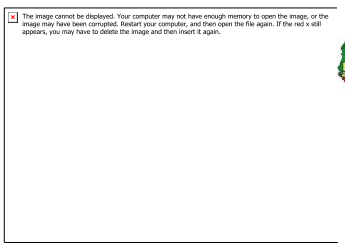















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## Appendix G

## Designs produced by Conventional Method group

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