American Journal of Educational Research, 2018, Vol. 6, No. 11, 1505-1521
Available online at http://pubs.sciepub.com/education/6/11/9

DOI:10.12691/education-6-11-9

The Effect of Computer Assisted Instructional Media on Secondary School Students' Academic Performance in Fine Arts in Ebonyi State

Paul Nwali Eche[1,*], Ifere Collins Okorie[2]

[1]Department of FINE and Applied Arts Education, Ebonyi State College of Education, Ikwo
[2]Department of Computer Science Education, Ebonyi State College of Education, Ikwo
*Corresponding author: echelus@yahoo.com

Received September 01, 2018; Revised October 10, 2018; Accepted November 19, 2018

Abstract The study investigated Computer Assisted Instructional Media (CAIM) as an interactive instructional technique using computer to present instructional material and monitor the learning that takes place. It uses the combination of text and graphics, sound and video in the learning process. This program helps the students' progress at their own pace, assisting them in learning and application of the material. It was designed to see the effect of Computer Assisted Instructional Media as a supplementing strategy on the academic performance of secondary school students in the subject of Fine Arts. Some of the objectives of the study include to: find out the relative effect of Computer Assisted Instructional Media (CAIM) as a supplementing and important strategy on the academic performance of students in Fine Arts, explore the difference between treatment effect in students with natural creative ability and those without and find out the influence of gender on their performance and enrollment in Fine Arts when exposed to computer assisted instructional media. The secondary school students studying Fine Arts drawn from SS11 class at Ebonyi State College of Education secondary School constitute the population of the study and equally selected as a sample of the study. The sample students were assigned into two groups (experimental and control group). They were equated on the basis of their performance score in previous semesters in the subject of Fine Arts and they comprised of forty (40) students. One group was randomly sampled by teaching them a chosen topic in Fine Arts without using computer to stand as a sample of the study while the other group was taught using CAIM. Both the groups were taught through practical method and Computer Assisted Instructional Media (CAIM) being used as a supplementary strategy for the experimental group. The experiment lasted for three weeks and data were collected from 80 students of the two groups. After obtaining the scores, the lists were prepared for each group and the means, standard deviations, differences between mean were computed with significance between the mean scores of both the groups on the variable of previous performance that was tested at 0.5 levels by applying t-test. At the end, it was found that Computer Assisted Instructional Media (CAIM) was effective for both male and female students which led to the recommendations made. Areas of further research like, conducting similar research in other subjects like biology, English language etc, was suggested.

Keywords: *fine arts, computer assisted instructional media, teacher centered, students centered, traditional instruction*

Cite This Article: Paul Nwali Eche, and Ifere Collins Okorie, "The Effect of Computer Assisted Instructional Media on Secondary School Students' Academic Performance in Fine Arts in Ebonyi State." American Journal of Educational Research, vol. 6, no. 11 (2018): 1505-1521. doi: 10.12691/education-6-11-9.

1. Introduction

1.1. Background to the Study

From the prehistoric period, people have searched for ways to make teaching and learning more effective, although, economic and social forces have all the time influenced educational practices. Within the second half of the 20th century, a number of attempts at changing the educational system and its components in many parts of the world have been made even in today's economic situation and skill of workers. The most important jobs in a modern economy are based on technical education and information technology. However, reforms and changes in educational systems are continuous processes. The need for the changes in production, land, labour and capital are much less important than in the social and technological climate of our society which remains the basis of all efforts towards better education. The changes and reforms are aimed at raising the standard in the schools, learning patterns and their outcome with the goal of improving the quality of education for all and consequently strengthening

the educational system in terms of structure, learning process, techniques and quality. Hence, it can be viewed that the main purpose of educational change is to help schools accomplish their goals more effectively by replacing archaic structures, programmes and practices with better ones, [1].

Advance in science and technology is greatly dependent on the level of literacy of any society. Schools are therefore incorporating technology in various forms in order to improve instruction and to give students valuable learning experiences. The major aim of the programmed instruction is to provide individualised instruction to meet special needs of individual learners. Educational system around the world are under increasing pressure to use new information communication technology (ICTs) to teach students the knowledge and skills they need in the present 21st century [2]. Technology can be used to improve education and certainly make students become more technologically literate. We must, however, avoid thinking that technology alone will be a 'quick fix' for all educational ills.

The current trend in research all over the world is the use of computers to enhance student's learning. Perhaps the greatest contribution of present day technology is the development of computer, which has influenced our lives in every sphere. An example of this influence is Computer Assisted Instructional Media (CAIM), which has proved to be an efficient and effective medium in the teaching and learning process. Computer Assisted Instructional Media (CAIM) is based on the principles of programmed instruction. Computer knowledge can be stated as knowing the various fundamental aspects of computers and the basic skills involved in the operations of computers. It also includes the applications of computer in teaching and learning processes [3].

One mode through which computers can be used in the teaching and learning processes is the Computer Assisted Instructional Media (CAIM) technology [4]. The use of CAIM as a supplement to conventional instructional technique is known to improve the academic performance of primary and secondary school students. [5] remarked that the conventional method is teacher centred, content driven, certainly not students centered as students are not given enough opportunities to participate in the classroom / workshop instructions. Students taught with these conventional methods are unable to retain their learning and apply it to new situations. Consequently, students lose interest, perform poorly, promote negative attitude and encourage poor retention of learning materials. The conventional method of instruction seems to have failed. We need a change in instructional technique, but we can't throw away the traditional instruction method completely. We just have to supplement it with another technique that is acceptably the world over. Computer assisted instruction package is a technique meant to supplement the conventional method of instruction. The study, therefore, intends to determine the relevance of CAI on development of skills among students in secondary schools in Ebonyi State.

The variety of media such as text, graphics, audio and video for content delivery has attracted many instructors to use internet for distance education [6]. While educational effectiveness and implementation issues have been common, Computer Assisted Instructional Media (CAIM) has remained popular among educators who maintain a belief that it is a useful supplement to classroom activities. In view of the above, the aim of the research is to examine, The Effect of Computer Assisted Instructional Media on the Secondary School Students' Academic Performance in Fine Arts. The present study will focus specifically on Ebonyi State secondary schools. This is because of its being rated as the most educational backward state in the south eastern Zone of Nigeria and its higher rate of unemployment.

1.2. Statement of the Problem

The learning of fine arts seems to be faced with some challenges. Such problems include the recent introduction of different packages in art works that come with information and communication technology. These new technological innovations have made it imperative that the teacher should align himself/herself with the new method of instructions to help the students achieve set objective(s). The high quality work achieved through the use of computers cannot be gotten through the use of a natural creative ability. The need to meet up with the global aesthetic requirement becomes imperative. The instructional technique that ensures better academic achievement by students is uncertain (i.e. Computer assisted instructional technique or conventional method of teaching). This forms the problem of the present study.

The problem of this study can therefore be put in question form thus: What is the effect of computer assisted instructional media on students' academic performance in the fine Arts?

1.3. Purpose of the Study

The main purpose of this study was to determine the Effect of Computer Assisted Instructional Media on the Secondary School Students Academic Performance in Fine Arts. Specifically; the study intends;

- To find out the relative effect of Computer Assisted Instructional Media (CAIM) as a supplementing teaching technique and important strategy on improving the academic performance of students in fine arts.
- To find out the influence of gender on their performance and enrolment in fine arts when exposed to computer assisted instructional media.
- To determine the easiest teaching techniques of achieving beautiful and modern art work, manually or mechanically.
- To determine the differences in performances of students exposed to Computer Assisted Instructional Media and those exposed to conventional instruction.
- To determine number of students that will be self-employed after graduation through effective use of Computer Assisted Instructional Media and those exposed to conventional instruction.

1.4. Scope and Delimitation of the Study

The study was delimited to the effect of computer assisted instructional media on secondary school student's

academic performance in Fine Arts in Ebonyi State. Ebonyi state is located in the Southern part of Nigeria made up of three educational Zones; Abakaliki Zone with four local Governments (Abakaliki, Ebonyi, Izzi, and Ohaukwu Local Government Areas). The Onueke Zone with four local Governments (Ezza North, Ezza South, Ikwo and Ishielu Local Government Areas). Afikpo Zone with five local Governments Areas (Afikpo North, Afikpo South, Ivo, Onicha and Ohaozara Local Government Areas). With this, Ebonyi State is made up of thirteen (13) Local Government Areas and a total of two hundred and twenty-two (222) secondary schools with over one hundred and twenty-two thousand, eight hundred and seventy-two (122,872) students. (ESSEB, 2016). The rational for choosing Ebonyi State as the area of this study is based on the need to improve academic performance students in fine arts in order to reduce unemployment. This could be achieved by training skilled artists who will come out to be self-employed and even employer of others. In fine arts, the present study covers graphics, painting, design, sculpture, textile, computer graphics and photography.

1.5. Significance of the Study

The present study shall be of benefit to the following; This study will encourage the use of Computer Assisted Instructional Media (CAIM) in all arts work productions. Students who feel that Fine Arts is meant for the gifted, will at the end of this study realize that with the introduction of CAIM, production of art works using CAIM, will be simplified. With the use of Computer Assisted Instructional Media, individualization of learning becomes a reality. At the end of this study students should know that with computer assisted instructional media, attention in the classroom will be gained, held and enhance their performance.

At the end of this study, teachers will be courage to adopt CAIM as an appropriate approach for instruction in regular and distance learning. Computer assisted instructional media will be used by teachers in magnifying or reducing objects for classroom use. By means of motion pictures or television, big objects or small objects can be brought into the classroom for closer examination by the art students. It will also foster a teacher's presentation, save his time and make his lesson more realistic and practical. It at the same time, encourage instructional media designers in designing and production of computer assisted instructional media that will be of benefit to fine arts students.

It will provide a basis for educationists to plan and conduct further researches on computer assisted instructional media. Curriculum designers will not be left out in benefiting from computer assisted instructional media in putting fine arts students in secondary schools in their curriculum planning activities. Also with the result of this research, the Government will be moved to build CAIM resource centers in our institutions of learning. This will make more fine arts graduates to be self-reliant and even employer of others and will also induce the educational administrators and supervisors to promote CAIM by providing computer accessories needed by fine arts students.

1.6. Research Questions/Hypotheses

The following research questions guided the study:

- What is the relative effect of computer assisted instructional media as a supplementing teaching technique and important strategy in the academic performance of students in Fine Arts?
- What is the influence of gender on their performance and enrolment in fine arts when exposed to computer assisted instructional media?
- What are the easiest teaching techniques of achieving beautiful and modern art work, manually or mechanical?
- What is the difference in performances of students exposed to Computer Assisted Instructional Media and those exposed to conventional instruction?
- What are number of students that will be self-employed after graduation through effective use of exposed to Computer Assisted Instructional Media and those exposed to conventional instruction?

1.6.1. Hypotheses

The following null hypotheses were tested at .05 level of significance that guided the study.

HO_1 There is no significant difference in the mean secondary school students' Academic Performance in Fine Arts when exposed to CAIM and when not exposed.

HO_2 There is the relative effect of CAIM as a supplementing instructional strategy on the academic performance of secondary school students in Fine Arts and when not used.

HO_3 There is a significant difference in the gender performance and enrolment in fine arts when exposed to computer assisted instructional media and when not exposed to CAIM.

HO_4 There is significant difference in the easiest teaching techniques of achieving beautiful and modern art work, manually or mechanically.

HO_5 There is a significant increase in the number of students that will be self-employed after graduation through effective use of exposed to Computer Assisted Instructional Media and those exposed to conventional instruction.

1.7. Limitations of Study

The following are the limitations of this study:

- Getting the cooperation of both staff and students, especially in the area of organising both the experimental and control groups, were very challenging.
- Getting the cooperation of the school authorities was also difficult initially.
- The psychological/emotional state of both the participating teachers and students may affect the results of the study in some way.

1.8. Operational Definition of Terms

The following operational definition of terms is to be discussed:

- Fine arts
- Instructional Media
- Computer Assisted Instruction Media
- Teacher Centred
- Learner Centred
- Traditional Instruction

2. Fine Arts

It has been defined as a vehicle for the expression or communication of emotions and ideas, a means for exploring and appreciating formal elements for their own sake, and as menses or representation.

3. Instructional Media

This is any device with instructional content or function that is used for teaching purposes. It is resource materials which help to facilitate teaching and learning. it is all available human and material resources which appeal to the learners' sense of seeing, hearing, smelling, tasting, touching or feeling and which assist to facilitate teaching and learning. These are channels of communication through which information passes for use an educational situation in conjunction with the instructor.

4. Computer Assisted Instruction Media (CAIM)

Computer Assisted Instruction Media, (CAIM), is an interactive technique whereby a computer packages are used to present the instruction and also to monitor the learning that takes place. It uses the combination of texts, graphics, sound and video in the learning process. It is the personalized teaching methodology by depending on the abilities of the computer to find relevant experience with different serial contents. Computer Assisted Instructional Media packages enhance students' academic performance in all aspects of learning in our institutions. By well-prepared lesson programs, therefore, a computer is one of the assisted teaching methods that students can learn by themselves.

The effect of computer Assisted Instructional Media came into use in the 1960s and it delivers basic skills instructions through a drill and practice format and at the same time designed to automate certain forms of tutorial learning.

5. Teacher Centred

Teacher centred is the situation whereby classroom activities are centred on the teacher. In this case the teacher leads the activity and information needed in the classroom arrangement. The teacher talks while the students listen. The students work alone and focus are on the teacher.

6. Learner Centred

Learner centred, which is also called child centred learning is an approach to learning, focusing interest on learners rather than the teacher. This is the process of putting the students' interests first. The learner interacts with the instructor one on one. The learners work in pairs, in groups, or alone depending on the purpose of the activity. They answer each other questions using the instructor as an information resource.

7. Traditional Instruction

Traditional instruction is a method of teaching. In this case Students are instructed by the teacher to study the textbook. The teacher provides information to students. In class periods are lecture based and involve note taking, usually through the use of a chalk board or white board. It is expected that students will answer questions generated by their teachers.

8. Review of the Related Literature

The review of the related literature is presented under the following sub-headings:

8.1. Model/Theoretical Framework/Conceptual Framework

8.1.1. Model/Theoretical Framework

* Computer-assisted instructional media and learning theories.
* Skinner's operant conditioning and CAIM.
* Cognitive theories and CAIM.
* Bandura's Social Learning Theory and CAIM.
* Other theories of learning.

8.1.2. Conceptual Framework

* Nature of computer assisted instructional media.
* Characteristics of computer assisted instructional media.
* Mechanism of computer-assisted instructional media.
* CAIM and programmed instruction.
* Research on computer - assisted instructional media.
* Advantages of CAIM.
* Disadvantages of CAIM.
* The Nature of Fine Art.
* Literature appraisal.

8.2. Computer-Assisted Instructional Media and Learning Theories

There are many definitions of learning, derived from the differing explanations supplied by psychologists to account for it. For the purpose of this study, however, learning is defined as the process through which experience produces changes in the nervous system,

resulting in changes in behaviour. The researcher is concerned with those theories of learning that have had the greatest effect in the past on learning with the aid of a computer as well as with those theories which appear to hold the greatest promise for future use of computer assisted instructional media (CAIM).

Learning is a complex phenomenon. There are many different types of learning: withdrawing hand after touching a hot toaster-learnt very rapidity is an example. Some theories have been concerned with global approaches that have aided understanding of higher mental processes involving in complex learning, but these theories seldom have been a significant help in accounting for the detailed components and antecedents of such behaviour. Since CAIM is applicable to a broad range of learning tasks, only the major theoretical representatives of both ends of learning continuum are being considered. Psychology emerged from the field of philosophy and physiology, in an attempt to understand philosophical based problems such as consciousness, memory and the working of the human mind. Unfortunately, behaviourism emerged from psychology and dominated the entire field. Behaviourism emphasized that progress was to be made in psychology only through the elimination of such research topics as memory and mind while concerning oneself solely with observable phenomena-behaviour.

At about this time in the field of learning, most theories agree that a certain condition are necessary in order for learning to occur. These conditions include contiguity, reinforcement and repetition (practice). The basis for behaviouristic theory was that a stimulus (S) that elicited a response (R) that was immediately followed by positive reinforcement would result in increasing the probability that the response would occur upon further presentation of the stimulus. Thus, S-R- reinforcement became the learning model. Skinner agreed with the contiguity principle, but emphasized the importance of the immediacy of the reinforcement following the response. The cognitive theories have, in general, agreed with skinner on this point. For the purpose of this study, then primary concept is the importance of reward (positive reinforcement) immediately following a student's correct response to a problem in a learning situation. There is also general agreement among the theories that repeated occurrences of the response followed by reinforcement that are necessary in order for learning to occur and for the materials to be retained.

8.3. Skinner's Operant Conditioning and CAIM

Skinner's views grew out of observations of performance of animals in a device that he invented. It consisted of a small box with a lever on one side. Whenever the animal depressed the lever, a pellet of food (positive reinforcement) was delivered. This came to be known as skinner box and has been widely used in learning for more than 50 years.

Skinner concerned himself in the years, predominantly with the study of low-level behaviours of animals and as a result contributed significantly to our knowledge of how simple behaviour are both learned and weakened (extinguished). Skinner then applied these concepts to complex behaviour and its modifications. His assumption was that high-level behaviour, when properly analyzed, could be interpreted in terms of the complex interplay of elementary concepts and principles. He entirely rejected cognitive explanations of behaviour as well as any explanations attributing behaviour to internal factors within humans or animals.

Skinner's later years were concerned with testing his theories concerning complex behaviour through the study of learning in human subjects. He developed teaching machines and programmed learning based on his response/reinforcement model. His later work dealt with complex learning, he emphasized the analysis of the task into small, discrete objectives so that repeated reinforcement could be applied to simple, discrete responses. He stressed that students be given task in a hierarchy so that they would learn the essential components first, and so that they would not fail [7].

8.4. The Application of Skinner's Theory in CIAM.

Skinner's view is directly applicable to the drill and practice and tutorial forms of CAIM and have been used successfully in these areas for many years. *Reinforcement in Drill and Practice:* skinner's main thesis is that positive reinforcement should consistently follow each occurrence of the desired response until the selected level of mastery is reached. Although he himself had little to say about punishment for wrong answers, most of his followers now accede that a mild punishment - a penalty, such as a reduction in score - following an incorrect response can be beneficial to learning. Once mastery is reached, skinner emphasized that students must be weaned from this approach in order to avoid rapid extinction (weakening) of the response. To do this, he recommended shifting from continuous reinforcement to a pattern of intermittent reinforcement.

The most effective patterns yielding the greatest retention of learning appears to be a shift first to a fixed-ratio schedule (in which every fifth or tenth, it response is reinforced), and finally to variable-ratio schedule (in which every net response is reinforced with delivery on a random basis). Skinner emphasized that through these methods, behaviour could be maintained indefinitely on a very small number of reinforcements. He concluded: Through a proper understanding of contingencies of reinforcements, we should be able to make students eager and diligent and be reasonably sure that they will continue to enjoy the things we teach them for the test of their lives [8].

In the design for the revised version of the programme, once the students have successfully reached mastery at all difficulty levels, the computer randomly select problems from all levels and presents them to the students. Although the same reinforcement and punishment principles are used, the application is switched from continuous reinforcement to intermittent. The pattern moves first to fix ratio and then to a variable ratio. Thus, in this sequence, a total of 20 problems is generated. For the first 10 problems, every other problem correctly solved is reinforced and every 3 problems correctly solved. 1 is randomly selected for the mild punishment. Students

correctly solving all 20 problems exit into game sequence and are permitted to play as long as they choose [7].

8.5. Application to Tutorials

Skinner's illustration of how to develop a programmed learning sequence is directly applicable to the design of CAIM tutorial modules, as follows: Obtain a clear, detailed objective specification of what it means to know the given subject matter. Write series of information, questions and answer frames that expose students to the material in graded steps of increasing difficulty and that frequently retest the same facts from many different angles. Require the learner to be active, i.e. require a response for each frame. Provide immediate feedback for each answer (response).

Try to arrange the material and question in such a manner that the correct response is likely to occur and be reinforce (i.e. void errors, so that learning is not accompanied by punishing failures) Permit students to proceed at their own pace. Provide ample backup reinforcement (praise, merits) for diligent and effective work.

8.6. Role of the Teacher

Skinner also expressed definite views concerning the role of the teacher in the learning in skinner's words: The best way to help student give birth to the answer he is struggling to recall is to give him a strong hint or even the whole answer, but that is not the best way to make sure that he will recall it in the future. As Comenius said, 'the more the teacher teaches, the less the students learn''. the better the teacher, the more important it is that he frees students from the need for instructional help [8].

The application of these views on the importance of student control is especially helpful when considering the design and development of tutorials. In this type of learning situation, the computer plays the role of adviser, hints, and help messages to assist the student as needed to achieve the correct answers, followed by the correct responses.

8.7. Cognitive Theories and CAIM

Cognitive theories are based on information processing models. There are concerned with how individual's knowledge and how they use it to guide decision and perform effective actions. These theories try to understand the mind and how it works. To achieve this, they view the computer as a model of the brain and employ much of the terminology and concept of information processing. A cognitive learning theories is concerned with several key items:

(1) Effect of stimuli on the organism's receptors.
(2) Storage of information in short-term memory (work memory).
(3) Storage of information in long memory.
(4) Processes involved in encoding and decoding information.
(5) Retrieval of the stored information, its possible contribution with other data, and its ultimate effect on behaviour of the organism.

Certain stimuli in the environment affect an organism's reception. These stimuli produce patterns of neural activity that are briefly requested by sensory Registers. The data are then transferred and recorded in short-term memory (STM), an important Concept in cognitive theory. Characters of STM are as follows:

- Only prominent features of the original stimuli are recoded.
- Short Term Memory has the capacity to hold only about 4 - 7 items for a limited time (20 - 30 second). The material is then either retained in STM through rehearsal, transferred to long-term memory (LTM) or lost. According one prominent model [9]. LTM contains information originally held in STM, which had undergone a process of semantic encoding. This process changes information from words and stimuli to propositions that have meaning and contains codes for retrieval at later times. Cognitive theory recognises the importance of reinforcement, but does not give it the central importance accorded by skinner. It indicates that learner behaviour sets in motion a process that depends on external feedback, which involves confirmation of correct performance.

An important concept contained in some cognitive theories is the executive control process. This process controls cognitive strategies relevant to learning and remembering in relation to such important activities as controlling attention, encoding of incoming information and retrieving of stored data. These type of activities were not considered in traditional behaviourism nor were they given importance by skinner. Their applications to CAIM however, are critical. It is perhaps in this area that cognitive theory has contributed the most to CAIM.

Cognitive learning theories are most applicable to the design and development of tutorials. This approach has been pioneered most actively by Robert M. Gagne, a former follower of skinner and the behaviourist model. Gagne has emphasized the importance of identifying the goal of the learning task followed by the development of specific instructional objectives to meet these goals. He emphasises that such objective must be stipulated in concrete behavioural terms. To develop instructional objectives, it is necessary to analyze the criterion task into elementary behavioural components and to determine their organization. The skill level of the students must then be assessed and programmes designed to teach the skills.

In development and presentation of materials, Gagne has followed skinner in emphasizing that learning must occur in small steps, sequenced so that lower-level learner required for performance on more complex task is learnt first. Again, like Skinner, he has emphasized the use of positive reinforcement in a repetitious manner.

In regard to the role of a teacher or adviser in CAIM, he again followed skinner's lead by emphasizing that hints and help needs to be adopted to the individual learner. He has suggested that students be provided with a little help at a time, thus permitting the student to use as much as he needs. The student is thus placed in control of the learning situation. So far as the master is concerned, Gagne has expanded skinner's basic views on the topic to include more details related to human learning. He has defined mastery as materials that have been learned to the level of which they are readily accessible to recall at the time of learning.

Gagne's most significant contribution, however, relates to his application of cognitive learning theories to task of

designing CAIM models. Thus he has brought to the topic some additional insights and emphases, such as his concern with gaining the student's attention and developing expectancies. This can be achieved in a CAIM model by providing advanced organizers in the instruction. These organizers might take the forms of charts or graphs that reflect the structure and organization of the lesson content.

Another point raised by Gagne is in defense of drill and practice. He indicated his belief that drill and practice, if viewed as a part of cognitive learning theory, simply speeds up the learning process, that it makes learning more efficient by making lower-level skins (such as the basic mathematics) automatic. Since such skills are used quite often, and for short-term (working) memory has a limited capacity, drill and practice reinforced the indexing characteristics of the basic skills, thus permitting them to be retrieved and placed in short-term memory for use very quickly [10].

[10] identified five categories of learning outcomes that he believed represent all types of learning. these include: Intellectual skills (how to do something of an intellectual sort). Cognitive strategies (capabilities that govern the individual's own learning, remembering and thinking behaviour), Verbal information, Motor skills and Attitudes within these various types of learning, [10] expressed his belief that there must be nine events of instruction.

8.8. Bandura's Social Learning Theory and CAIM

Social learning theory has attempted to combine cognitive psychology and the principles of behaviour modification with its own special emphasis on the person in the social setting with all of the resulting ramifications. Social learning theory has provided a much needed breadth to these other theoretical positions and has provided a basis for many of the types of learning that appear to occur in simulations. The theory attempts to describe how personality could evolve out of social conditions. It deals explicitly with techniques of personality assessment and behaviour modifications in clinical and educational settings.

Behaviour theory in general and skinner's operant conditioning principles, in particular, have placed great emphasis on learning by direct experience, by the application of reinforcement in response. Although social learning accepts these concepts as vivid conditions for some types of learning, the theory also has proposed that a large amount of human learning is done vicariously, through observing another person making the responses (or reading about it or viewing pictures of it) and then by trying to imitate the response of the model.

[11] stated his views in regard to observational learning as, "most human behaviour is learning observationally through modelling: from observing others, one forms an idea of how low new behaviours are performed and on later occasions this coded information serves as guide for action". He pointed out that observational learning is governed by four component processes: Attention, Retention process, Conversion of symbolic representation into appropriate actions and Motivational processes.

Attention refers to the fact that people must attend to and perceive accurately the significant features of the modelled behaviour. Intentional processes determine what is selectively observed and extracted from exposure to others.

Retention processes draw attention to the fact individuals must remember the modelled behaviour in order to be influenced by it. Observers who translate observed behaviour into word pictures learn and retain better than those who do not. The third component of observational learning concerns turning learning into actions. This involves reinforcement of behaviour through self-corrective adjustments on the basis of feedback.

Finally, motivation affects observational learning in that behaviours that seem effective for others are favoured over behaviours that are seem to have negative consequences. As a result, it has been found that high-status models are more even often imitated (their behaviour are seen as leading to success).

Since earlier theories were primarily concerned with reinforcement, it may be helpful to quote Bandura's position: According to the social learning view, observational learning occurs through symbolic processes during exposure to modelled activities before any response has been performed and does not necessarily require extrinsic reinforcement…. does play a role in observational learning, but mainly as an antecedent rather than a consequent influence. Anticipation of reinforcement in one of several factors that can influence what is observed and what goes unnoticed [11].

8.9. Applicationin CAIM

The implications social learning theory seems most appropriate for the type of learning that occurs in many CAIM simulations. Although real models are not used in such simulations, the computer provides a reality situation in which student may learn vicariously through interaction with the model. In such cases, the reinforcement apparently occurs as a result of students' response to the model, which brings about a change in conditions. The student controls the situations and is thus positively reinforced.

Several observations seem appropriate in relation to applying social learning theory to the design of simulations. The first relates to the importance of instructions to students to guide the learning. The instructions should provide with information concerning content, structure and goals of simulation, and in addition should inform students concerning the benefits of adopting the modelled behaviour. As [11] has pointed out, this will result in the development of expectations that served to reinforce learning. Second, stimulation should include as much interaction between student and computer as possible, and the simulation should be used by a number of times. This will enhance retention and permit feedback to improve the modelling.

From the motivational point of view, the computer should provide a model that is as human like as possible. Similarly, relevancy of subject matter is important. The degree to which the student feel the subject matter is relevant will directly affect their performance. In the designing CAIM modules, relevance can be improved by selecting a topic or design themes that represent important issues for the students or by demonstrating the practical

or applied aspects of the subject matter. Finally, the way in which faculty disuse the use of the simulation in class, the importance they accord it, and the physical surroundings in which the simulation is used all will positively or negatively affect the outcome of the modeled learning.

To sum up, reinforcement is probably the most-accepted concept in learning theories in general and is central to the theories outlined for use in the development of CAIM course ware. Yet most behavioural theories speak almost exclusively of the need for contiguity and repetition of reinforcement. In CAIM, however, both quantity and type of reinforcement are to be considered. So far as quantity is concerned, it has not been found to be of significant importance in most studies. Thus, providing two minifies of game playing as a reward for attaining mastery with.

9. Conceptual Framework

9.1. Concept of Computer

The exact date of the invention of computers is difficult to pin down. Consider that the discovery of computers was originally linked to devices that were used for calculation. The Computer had been in use by artists. Leonardo da Vinci (1452 - 1519) made drawings of gear-driven calculating machines, but apparently never built any. A Leonardo da Vinci drawing showing gears arranged for computing. The first gear-driven calculating machine to actually be built was probably the *calculating clock*, so named by its inventor, the German professor Wilhelm Schickard in 1623. This device got little publicity because Schickard died soon afterward in the bubonic plague. [12] 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. A computer is a programmable machine. It allows the user to store all sorts of information and then 'process' that information, or data, or carry out actions with the information, such as calculating numbers or organising words.

According to [12], the primary functions of computers are imputing and storing information. To be computer literate amounts to be able to read, write and speak the language of the computer [13]. In education, the uses of computers are now being integrated with the teaching and learning processes.

9.2. Computer Assisted Instructional Media

Computer Assisted Instructional Media are important elements of teaching and learning activities. The term instruction according to [14] is a deliberate arrangement of experiences within the learning space, classroom, laboratory, workshop etc aimed at helping learners to achieve desirable changes in behaviour or performance. Media according to Vikoo (2008) is used to think about Television, Satellite Communication, Computer and other sophisticated modern technologies. Going through the descriptions of instructional media, it would be observed that the understanding behind the use of instructional media is to aid learner in his learning.

For effective use of computer assisted instructional media, they are often classified into various classes, so that relevant media would be adopted for a particular situation. However, [15] advocated for classification of instructional media based on convenience. There is Durable and Non-Durable Media: Durable materials are those that last for a very long time. Such media include Computer, Projectors, Television, Radio, Cameras, etc. They are hardware and high technology materials.

Non-Durable media as the name implies, are materials that have short life span or those that cannot be stored for a very long time These media include pictorial and graphic representations such as posters, maps, charts etc; projected pictures like film strips, transparencies, motion pictures etc. Audio-Visual Media: Media under this classification appeal to the sense of hearing and seeing. Examples include video, television, computer motion pictures etc. Print and Non-Print Media: Print media include books, newspapers, journals pamphlets, etc while the non-print media are maps, charts, posters, graphs etc.

Projected and Non-Projected Media: The projected materials require other equipment, especially projectors to function. In most Instances, they require electricity. Examples according to [15] include slide and film strips, video cassette, transparencies, motion pictures, computer software, etc. The non-projected media are those that do not require any other equipment to function. Materials like poster, flash cards, charts, pictures, etc. fall under this category. Based on the criteria, instructional media can be classified as low and high technology media, print and non- print media.

In the classroom utilization of CAIM, students often work independently or in pairs at computers around the room. Software effectively guides students through a series of interrelated activities and instruction and addressed varieties of learning styles. Working in pairs could also facilitate learning. [16] found in their study that students in cooperative environments developed more positive attitudes towards fine arts than students in traditional environments.

Cooperative learning not only for the positive effect it has on student performance but also for the positive effect it has on motivation, classroom socialization, the student's confidence in learning and attitude toward the subject being learnt. Researchers have also found that CAIM enhances learning rate i.e., students learn the same amount of material in less time than the traditionally instructed students or learn more material if given the same amount of time. [17]. Moreover, students using CAIM also retain their learning better [17]. That is to say the use of CAIM leads to more positive student attitudes than the use of conventional instruction.

The most exciting innovation in the educational technology is computer assisted instructional media. (CAIM). It is defined as an interactive technique where by a computer packages are used to present the instruction and also to monitor the learning that takes place. It is also known as Computer-Assisted Learning (CAL), Computer-Based Education (CBE) and Computer-Based Training (CBT). Computer Assisted Instructional media uses a combination of texts, graphics, sound and video in the teaching and learning process. Chika (2008) succinctly state that CAIM can provide access to information source,

enable communication, create interacting learning environment and promote change in methods of instruction. It encourages learning as they provide a stimulating environment and promote enthusiasm, it can help the shy student who is afraid to make mistake in a classroom situation and provide quicker (and perhaps more directed) feedback. It emphasis active learning, enrichment of learning, encouragement of greater student's independence and task-based teaching.

Computer assisted instructional media (CAIM) uses a combination of text, graphics, sound and video in learning process. The computer has many purposes in the classroom and it can be utilized to help the students in all areas of their study. CAIM refers to the use of the computer as a tool to facilitate, improve skill and instruction in teaching and learning. The use of CAIM let students progress at their own pace, assisting them in learning the material. It is a set of voice, text, graphics, animation, video and other computer technology in one of the modern teaching methods. Research has shown that when used in addition to regular instruction, CAIM improves students' attitudes, motivation and academic performance. The computer was found to be particularly effective with the handicapped, elementary students and secondary students.

Computer assisted instructional media is relatively new field in which the pioneer efforts occurred around 1960 following the introduction of computers into higher education. A number of large-scale, heavily funded CAIM projects have been conducted since then, with their result having implications for the future use of CAIM as a classroom tool.

9.3. Research on Computer Assisted Instructional Media (CAIM)

Computer assisted instructional media (CAIM) refer to applications purely designed to teach a variety of subject areas to learners. The supporters of CAIM have high expectations for the computer as an instruction for identifying and meeting individual needs. Many studies conclude that using CAIM to supplement traditional instruction is better than the instructional programme itself. [18] showed evidence that a curriculum supplemented with CAIM led to gain achievement in some areas of curriculum. Tsai and Pohi studied the effectiveness of the lecture approach and CAIM on college students learning how to programme. They found significant difference when the achievement was measured by quizzes of examination scores.

CAIM research has generally been positive regarding the time it takes to learn concepts. [19] describes several studies in which students learn more quickly with CAIM than with traditional instructional. Teachers face the challenge of motivating students and foster in them a positive attitude to improve their chance for success in school. For example, an essential element for improving students' spelling is keeping interest high. There are many studies that report students. positive attitude toward the computer and how computer motivate students and how they maintain high interest [20].

Some researchers have tried to find out if students prefer computer-based methods simply because a computer is involved. Other research has focused on the computer's influence on student attitudes toward school and curriculum. [21] found that students react favourably to computer use for instructional tasks. Another common finding of studies in this area is that students usually develop a more positive attitude toward computer in general as a result of their exposure to CAIM [22].

9.4. Advantages of Computer Assisted Instructional Media

Many of the advantages of programmed instruction are also advantages of computer assisted instructional media and web-based learning. The advantages of computer assisted instructional media no matter the classification are not in any way hidden. [14] summarised the benefits by saying that usage of computer assisted instructional media increases the rate of learning by the learners, makes learning to be real and permanent, saves teacher's time which would have been wasted on oral presentation and explanation of subjects contents, promote learner's participation in learning activities, makes learning available to wider audience and helps teacher and learner overcome physical difficulties in teaching and learning.

However, despite the enormous advantages of computer assister instructional media usage in the teaching learning situation, [23] observed that up till 1998 only 0.6% of Nigerian population own personal computer, 6.7% own television while only 14.6% own radio. Also, there are only about 410 internet host in the country. The statistics as presented by [23] revealed that majority of Nigerians lack access to electronic instructional media. A review of the literature shows that computer assisted instruction media can be an effective vehicle for student motivation and learning [24]. One study indicates that CAIM motivates students because it offers them choices and control over their learning. still several studies indicate that student learning rate is faster with CAIM than with traditional instruction [25]; Kulik, et al., 1994). Not only is it indicated that students learn faster, but it is also suggested that they retain the information longer [24].

The study of statistics can be tedious especially because of a lot of formulas to work with and computations that are long and difficult to use. Computer-assisted instruction media (CAIM) could be of great help because of the drill-and-practice, tutorial, or simulation activities offered either by themselves or as supplements to traditional teacher directed instruction. [17]. Cotton found in her study that computer software provides many instructional benefits and CAIM can have a much greater impact on student learning.

9.5. Uses of Computer Assisted Instructional Media in Fine Arts

As a new teaching method, CAIM teaching technology tends to be all-round, multi-level, and it can make the teaching contents vivid, interesting, fascinating and concrete. Since CAIM has been transformed from teachers explaining tool to students' cognitive tool, it changed the function of instructional method applied in the classroom. Constructivism emphasizes the use of a variety of information resources to support "learning" rather than

support “teaching”. In the process of teaching fine arts in the classroom, it is appropriate to use the projector, audio, video, computer soft wares and other media. This can make the teaching process more vivid, intuitive and such way could promote the overall optimization of teaching effectiveness. CAIM can help to achieve a variety of artwork with a strong two-way aesthetic simulation combined to a perfect whole. Such an effect of teaching activity cannot be achieved in traditional teaching instruction.

CAIM features greatly enhance high degree of students, participation in learning and stimulate student’s interest in fine arts learning. Constructivist learning theory emphasizes students actively involved is the key factor to improve learning outcomes. By the way of providing students with a variety of teaching resources and the creation of a learning situation, CAIM would enable students to participate in the teaching activities in fine arts as learning subjects and knowledge can be achieved through the construction of meaning. On one hand, the bright colours, cute cartoon characters, magical animation on the screen effectively attract the students’ attention; students’ involuntary attention could be aroused. On the other hand, by operating the computer to complete the learning task, the students’ curiosity and sense of creativity has been greatly fulfilled.

Melodious sound and background music in the computer as an instructional medium could create a very relaxed atmosphere for artists to carry on with his artworks. The use of CAIM could improve the enthusiasm of students and applying multimedia teaching in classroom teaching and learning of fine arts, not only create interaction between the students and the machine but also between students and students, between students and teachers. In preserving of art works, sharing of concepts and the introduction of foreign concept, CAIM could be used in performing these actions in a short period.

Computer assisted instruction media are based on teaching and learning with unique digital virtual Visual results which help arts teachers to break through difficult points of teaching. CAIM as a strong visual teaching and leering aids, arts appreciation could be at the high end through digital projector, you can enlarge a work clearly so that students can truly appreciate. When you enjoy three dimensional arts, computer assisted instructional media can be used not only to the usual visual way, but allow students to enjoy the objects in a visual angle of the shape or its internal structure, and can make a dynamic show effect. If the three-dimensional art works rotate up, you will appreciate all sides. Using computer assisted instructional media in teaching arts, students will have real novelty visual effects, unique appeal which will enable the lesson learnt to be an unforgettable impression. Computers with powerful multimedia features, set the text, images, graphics, sound, animation and videos as one. Arts teachers according to their teaching needs will now know that the traditional teaching techniques can’t express things and phenomena, such as presentation of vivid animation, affection of sound images, colorful teaching pictures etc as CAIM techniques. CAIM can visualize abstract problems, dynamic static problems in resolving difficult to express those teachers and students on issues that are difficult to understand, dynamic display of the process of change, breaking the difficulties in teaching.

In the process and design courses in the teaching of, procedures relating to the production process, procedures, and methods for complex, critical, more skill points and difficult points, teachers have to do a lot of demonstrations. Teachers to use classroom time demonstrates a complete production process, not an easy task, such as draw “simple design” instruction, which only paint part of, is not a two times to complete, very delayed time, and there’s no way that the whole class can see it clearly. In traditional teaching, Professor of many teachers often has to orally, a little demo, such teaching; students often fail to master the techniques on the difficulty. Using CAIM in teaching, our pattern of making full program can be made into a slide show of pictures, drawn from sketches, copy, paint, to adjust, modify, color conversion, are very convenient, fast, display clear and unique process as a whole, students study while watching the show, impressive teaching difficulties easily resolved.

With the use of the computer assisted instructional media, the creative ability level (high, medium, low) of the fine arts students will be greatly enhanced positively on learner. [26]. According to [27], this indicates certainty that with the use of computer assisted instructional media, the students’ creative ability level escalates. The computer assists students accomplish more in less time and with a better quality. The creative ability level gaps of student will close and eventually the lower level disappears [26].

9.6. Concept of fine Arts

Arts is a means or medium of self-expression. It is a means of self-expression through skillful use of a given medium. It could be defined as the visual representation of personal feelings, through skillful use of the artistic medium. However, many see it as a vehicle for the expression or communication of emotions and ideas, a means for exploring and appreciating formal elements for their own sake, and as mimesis or representation. The widely used dictionary defines art in this way, the quality production or expression of what is beautiful, appealing or of more than ordinary significance. When we speak of art we are usually referring to dance, theatre, music, alteration or aesthetics and visual art. Art is the process or product of deliberately and creatively arranging elements in a way that appeals to the senses or emotions, especially beauty.

In its narrow sense, the word art most often refers specifically to the visual arts, including media such as painting, sculpture, and printmaking. However, "the arts" may also encompass a diverse range of human activities, creations, and modes of expression, including music and literature. Traditionally, the term art was used to refer to any skill or mastery. This conception changed during the Romantic period, when art came to be seen as "a special faculty of the human mind to be classified with religion and science". Generally, art is a human activity, made with the intention of stimulating thoughts and emotions. Beyond this description, there is no general agreed-upon definition of art.

The nature of art has been described by Wollheim as "one of the most elusive of the traditional problems of human culture". This aspect of art is made up of fine and applied art popularly called FAA. Under fine we have

drawing, painting and sculpture while under applied we have ceramics, graphics and textile. While the non-visual art includes music, poetry, appreciation and theatre art. This is regarded as non-visual art because not in any way seen in tangible form. The only different between fine and applied art is that fine art is only concerned with primarily the creation of beauty or purely for aesthetic expression or communication. While applied art is scientifically applied. That is, its aesthetic values are used in the design or decoration of all the utilitarian objects.

Art as form has its roots in the philosophy of Immanuel Kant, and was developed in the early twentieth century by Roger Fry and Clive Bell. Art as representation has deep roots in the philosophy of Aristotle. The most common usage of the word "art," which rose to prominence after 1750, is understood to denote skill used to produce an aesthetic result. Britannica Online defines it as "the use of skill and imagination in the creation of aesthetic objects, environments, or experiences that can be shared with others. By any of these definitions of the word, artistic works have existed for almost as long as humankind: from early pre-historic art to contemporary art.

9.7. Summary of Reviewed Related Literature

In this study, the research reviewed those topics in learning theory on which there is general agreement. The research will relate those concepts to CAIM applications.

Most theories agreed that certain conditions are necessary in order for learning to occur. These conditions include contiguity, reinforcement and repetition (practice). The basis for the behaviourists theory was that a stimulus (s) that elicited a response (R) that was immediately followed by positive reinforcement would result in increasing the probability, that the response would occur upon further presentation of the stimulus. This -R-S-reinforcement became the learning models. However, skinner agreed with the contiguity principle, but emphasises the importance of the immediacy of the reinforcement following the response. The cognitive theories have in general, agreed with the skinner on this point. For the purpose of this study, the primary concept is the importance of reward (positive reinforcement) immediately following a student's correct response to a problem in a learning situation.

Skinner views grew out of observations of the performance of animals in a device that he invented which consist of a small box with a lever at one side. Whenever the animal depressed the lever, a pellet of food (positive (reinforcement) was delivered as it is known as a skinner box which is used in learning. Skinner 's views are directly applicable to the repeated, practice and tutorial form of CAIM and have been used successfully in the area of fine arts. His illustration of how to develop a programmed learning sequence is directly applicable to the design of CAIM tutorial modules.

10. Research Method

This aspect of the research deals with the following sub-headings; research design, area of the study, the population of the study, sample and sampling technique, instruments for data collection, validation of the instruments, reliability of the instrument, method of data collection, and method of data analysis.

10.1. Research Design

The study is aimed at investigating the effect of computer assisted instructional media (CAIM) on secondary school students' academic performance in fine arts in Ebonyi State. As it is an experimental study and the purpose was to see the relative effectiveness of teaching strategy, it is necessary to look into the various designs usually adopted in experimental research.

The design found to be most useful for the purpose of this study is the post-test only equivalents groups design (quasi-experimental). In this case subjects are randomly assigned to the experimental and the control groups. The experimental and the control groups are made up of student from different levels chosen for this study.

The following is the symbolic representation of the design.

R E = T O1
R C = - O2

Where
R = Randomly selected?
E = Experimental group
C = Control group
O = Observation or measurement
T = The experimental treatment to which a group is exposed i.e. independent variable.

This design is one of the most effective in minimizing the threats to experimental validity. At the conclusion of the experimental period, the difference between the mean test scores of the experimental and the control groups are subjected to a test of statistical significance, a t-test or an analysis of variance-ANOVA [28].

In this design, two groups are randomly secured from the availability group. One of the group is treated as an experimental group. There is no pre-testing. The study is based on Operant Conditioning theory on B. F Skinner, where response leads to reinforcement and reinforcement influences the future response. Reinforcement may be pleasant or unpleasant, depending upon the nature of the response.

10.2. Area of the Study

This study was carried out in Ebonyi state of Nigeria. Ebonyi state is in southeastern part of Nigeria and is made up of three education zones namely; Abakaliki Zone: made up of; Abakaliki, Ebonyi, Izzi, and Ohaukwu Local Government Areas. Onueke Zone: made up of; Ezza North, Ezza South, Ikwo and Ishielu Local Government Areas. Afikpo Zone: made up of; Afikpo North, Afikpo South, Ivo, Onicha and Ohaozara Local Government Areas. This gave a total of thirteen Local Government Areas with a total of two hundred and twenty-two (222) secondary schools with one hundred and twenty-two thousand eight hundred and seventy-two (122,872) students. (ESSEB, 2016). The rational for choosing Ebonyi State as the area of this study is based on the need to improve the academic performance secondary school

students' in the subject fine arts through the effect of computer assisted instructional media as the way of reducing on employment in Ebonyi State.

10.3. Population of the Study

The population of the study constitutes students studying Fine Arts drawn from 112,340 JSS111-SS111 secondary Schools offering Fine Arts out of comprised 122,872 secondary school students in the 222 public or government owned secondary schools in Ebonyi state (ESSEB, 2016). This population was the most appropriate for these types of study because real creativity in the Arts is built from this age of students who will come out of school to become jobless or unemployed. They will at this level get used with computer assisted Arts equipment.

10.4. Sample and Sampling Techniques

The sample used for the study consisted a total of four hundred (400) JSS111, SS1, SS11 and SS111 Fine Arts students from different levels. These students drawn from the Ebonyi State Secondary Schools was used as a sample of the study. This was because computer class was very essential in this study and majority of them at this level of study are computer compliance. The sampled students were divided into two groups, experimental group and a control group comprising of the different levels. One group was randomly sampled by teaching them a chosen topic in Fine Arts without using computer to stand as a sample of the study while the other group was taught using CAIM. Both the groups were equated on the basis of their scores in previous semester in the subject of Fine Arts. Each group comprises two hundred (200) students.

10.5. Instrument for Data Collection

The instrument used to collect data for the study was Fine Arts-based CAIM experimental test. It was adopted by the researcher from the subject taught to the students during the experimental. (see appendix 5) It was made up of practical choice questions to answer only four, bearing in mind that fine Arts is more of practical. This was based on Fine Arts units in their scheme of work. This unit were taught during the experiment to both experimental and control groups and were aimed at measuring the outcome of the learning. The test was administered to both groups.

10.6. Validation of the Instrument

The instrument received face validation from experts drawn from the education foundation and measurement and evaluation Department, Colleges of Educations and some faculties of education in the universities in Ebonyi State.

10.7. Reliability of the Instrument

The researcher made a thorough study of the Fine Arts units in the scheme of work and techniques of test construction. These units were taught during the experiment to both experimental and control groups and were intended to measure the outcomes of learning. The test was administered to both groups and was accepted.

In case of the reliability of the test**,** the split-half method (odd-even) was used to test the reliability of the post-test scores obtained by the students who formed the sample of the study. The coefficient of reliability was determined through the use of Spearman-Brown prophecy formula, estimating reliability from the comparable halve of the post-test.

The data obtained from general test records was the scores from Fine Arts on the test given to the sampled students at the end of previous semester examination. The scores were treated as previous performance and were obtained to equate both the groups on the variable of previous performance.

To this end the same instrument was administered to thirty (30) secondary school students who were not enlisted for sample from a nearby state (Cross River main town). The test - retest took three and half weeks. The mean value obtained using Spearman-Brown prophecy formula for reliability coefficients was 0.75. This high figure is an indication of high reliability of the instrument.

10.8. Method of Data Collection

There are two different treatment (teaching) patterns applied during the experiment. Both the groups were taught through practical method by the same teacher. The Computer Assisted Instructional Media (CAIM) is as supplementary strategy for the experimental group. During the experiment period, the experimental group received the treatment (teaching) of independent variable, i.e. Computer Assisted Instruction. The experimental group was also exposed to practical works using computer.

The control group is kept busy in the same activities such as guided practice and independent practice but without using computer. This was adopted to control the variable of time and to realize the primary objective of the study. The experiment continued for three weeks. The post-test was administered immediately after the teaching was over. The purpose of this test is to measure the performance of the students constituting the sample of the study. Final data (scores) were collected from 80 students of the two groups.

The researchers with trained research assistants were shared into three groups (covering the three zones) and the sampled schools were also shared into three, a researcher leading each group. They are to visit each group of sampled schools, sample out the students in the sample class and administered the instrument on them. They will monitor the teaching, attend to the items on the questionnaires and collect it back when they finished responding to all the items. The research assistants have already been trained on the modalities of questionnaire administration.

10.9. Method of Data Analysis

The performance scores of the sampled students were obtained as a result of the post-test. After obtaining the scores the list was prepared for each group. However, the research questions were answered using means, standard

deviation and well were computed. Significances of the difference between the mean scores of both the groups on the variable of the pervious performance and scores on post-test is at.05 level by applying *t-test.* To see the treatment effects high and low levels of performance of both the groups, the factorial design (2 x 2 analysis of variance) was applied. For this purpose, students of both groups were divided into two halves, i.e. high performers (above the mean score) and low performers (below the mean score). This division was made on the basis of scores on pervious performance tests. The factorial design is symbolized as bellow:

Experimental	control
C CELL 1	CELL 2

Gender

Experimental	control
C Cell 1	Cell 2
Cell 3	Cell 4

Creative ability,

Uncreative ability

Standard error of difference between two means for statistical analysis the formulaic followed by Garrett (1997) and Gay (2000) were applied.

The following formulaic were used in doing statistical analysis:

$$SED = \frac{SD^2_1 + SD^2_2}{N_1 + N_2}$$

11. Computation of t-*value*

$$t = \frac{M_1 - M_2}{SED}$$

111. Analysis of variance

Step 1 = correction term (C) = $\frac{(X_1 + X_2)^2}{N_1 + N_2}$

Step 2 = SS total = $X_1^2 + X_2^2 - C$

Step 3 = SS between means = (X1) + (X2) - C

Step 4 = SS within groups = SS Total - SS means

Step 5 = ANOVA table

Source of variation	Degree of freedom	Sum of square	Mean square	F	t-value
Between group means					
Within groups					

M.S within groups = SS Within groups

Degree of freedom within groups

F-value = $\frac{\text{M.S Between group means}}{\text{M.S within groups}}$

T-value = F

IV. Factorial design (2x2 analysis of variance)

Step 1 = correction term (C) = $\frac{(X.....)^2}{N……}$

Step2 = SS total = $X^2 - C$

Step3 = SS Cells = N ($d_{11}^2 + d_{12}^2 + d_{21}^2 + d_{22}^2$)

Step4 = SS within cells = SS Total - SS Cells

Step5= SS Treatment = N_1. (d_1^2. + d_2^2)

Step6 = SS Intelligence = N1. ($d_1^2 + d_2^2$.)

Step7 = SS Interaction = SS Cells - SS Treatment - SS Intelligence

Step8= ANOVA (2 x 2) table

Source of variation	Degree of freedom	Sum of squares	Mean square	F	P
Treatment					
Intelligence					
Interaction					
Within cells					

11. Data Analysis, Interpretation and Discussion of Findings

This chapter is confined to the analysis, interpretation and discussion of data obtained from the College examination records and through post-test. Previous performance scores in the subject of Fine Arts were obtained from the College examination records to equate the groups. Significance of difference between the mean scores of experimental and control groups on previous performance scores and post-test were found out by applying t-test analysis of variance and factorial design (2x2 analysis of variance). Statistical packages for social sciences (SPSS) were used to analyze the data.

The summary of results is presented in table.

Table 1: indicates that the mean score of the previous performance in Fine Arts of the experimental group was 53.4 and that of the control group was 54.5. The difference between the two means was not significantly statistically at 0.5 test-value level. Hence, both the groups could be treated as equal on the variable of pervious performance in Fine Arts. While the mean scores of the post experimental group was 76 and that of control group was 59.8. The difference between the mean was significantly statistically at 6.8 test-value Level. Therefore the two groups could be treated as.

Table 2. Indicates that the mean score of the previous performance in Fine Arts for the experimental group was 43.26 and that of the control group was 47.87. The difference between the two means was not significantly statistically at -4.8 test-value Level. Hence, both the groups could be treated as equal on the variable of pervious performance in Fine Arts. On the post experimental and control groups, their mean scores were 64.50 and 56.33 respectively, while the significant difference between the two means scores was significantly statistically at 14.9 test value Level. These indicate that much improvement is achieved when treated with CAIM.

Table 3. Shows that there was no significant difference between the mean scores of those with natural creative ability in the pervious performance for experimental and control groups since their mean scores are 62.48 and 63.47 respectively. Hence the mean scores for post experimental and control groups was 85.77 and 65.05 respectively. This portrays that much improvement is recorded when treated with CAIM.

Table 4: Shows the previous means scores of experimental and control groups was 56.1 and 56.8 respectively. These reflect that there was no significance difference between the mean scores on previous performance of the gender in fine arts. Hence the significant difference between the mean scores of gender and rate of enrollment in fine arts was at -0.5 t-value level. While the mean scores of the

post experimental group scores were 77.8 and that of control group was 60.7. The difference between the mean was significantly statistically at 21test-value Level. Therefore the two groups could be treated as unequal on the variable of post experimental performance in the fine arts.

The result in Table 5 indicates that the experimental group that was used to find out the students' reactions when using CAIM in doing some artwork, 26 out of 40 strongly agreed while 9 agreed. Three strongly disagreed and two disagreed. Therefore the highest score obtained from the experimental group students response when exposed to CAIM psychologically the students showed positive reactions in learning.

Table 6 indicates that the mean score of the experimental group was 81.9 and that of the control group was 55.8. The significance difference between the means was significantly statistically at 44 test value Level. Hence, both the groups could be treated as unequal on the variable mean score of experimental group in Fine Arts.

The Table 7 reflects that the f-value obtained from the experimental group previous and post test scores is 64.147 while the significant is at .000 level from the source of variance was statistically significant, but that of control group was not statistically significant at 8.547 f-value level and the significant was at 005 levels.

Table 1. Significance of difference between the mean scores on previous academic performance test of Experimental group and Control group of student in Fine Arts

Group	N	df	Mean	SD	SED	t-value
Previous test scores for experimental group	40	39	53.4	12.9	3.4	0.5
Previous scores for control group	40	39	54.5	10.1		
Post experimental group scores	40	39	76	12.6	2.4	6.8
Post control group scores	40	39	59.8	5.6		

Not significant t at 0.5.
Source: Researcher field survey 2018.

Table 2. Significance of difference between the mean scores of the treatment effect on students without natural creative ability on previous performance and post Experimental and Control groups

Group	N	df	Mean	SD	SED	T-value
Previous test scores for Experimental	19	18	43.26	5.7	0.97	-4.8
Previous test scores for Control	23	22	47.87	2.9		
Post Experimental test scores	18	17	64.50	4.7	0.55	14.9
Post Control test scores	24	23	56.33	1.0		

Insignificant t at -4.8 *Significant t at 14.9*.
Source: Researcher field survey 2018.

Table 3. Significance of difference between the mean scores of the treatment effect on students with natural creative ability on previous performance and post experimental and control groups

Group	N	df	Mean	SD	SED	T-value
Previous test scores for Experimental group	16	15	62.48	2.7	1.5	5.7
Previous scores for Control group	17	16	63.47	3.8		
Post Experimental group test scores	22	21	85.77	34.8	32.1	0.65
Post Control test scores	16	15	65.05	3.1		

*****Insignificant at 5.7 but significant t at 0.65.
Source: Researcher field survey 2018.

Table 4. Significance of difference between the mean scores of the influence of gender and rate of enrolment of students in fine Arts when exposed to CAIM of Experimental and Control groups

Group	N	df	Mean	SD	SED	T-value
Previous scores for experimental group	18	17	56.1	1.7	1.4	-0.5
Previous scores for control group	18	17	56.8	6.9		
Post experimental group scores	18	17	77.8	3	0.8	21
Post Control group scores	18	17	60.7	4.4		

insignificant t at -0.5 t-value *significant at 21 t-value*.
Source: Researcher field survey 2018.

Table 5. The scores obtained from the response of the questionnaire on the reactions (positive or negative) of students about effect of computer assisted instructional media (CAIM)

Group	Scores
Strongly Agreed	26
Agreed	9
Strongly Disagreed	3
Disagreed	2

Source: Researcher field survey 2018.

Table 6. Significance of difference between the mean scores of the academic performance of students exposed to CAIM and those exposed to conventional instruction in experimental and Control groups

Group	N	df	Mean	SD	SED	T-value
Experimental	40	39	81.9	5.8	0.5	44
Control	40	39	55.8	1.6		

Significant t at 44.
Source: Researcher field survey 2018.

Table 7. Analysis of variance and the test of significant difference (ANOVA AND TOSD)

		Mean	N	Sum of Squares	df	Mean square	Std. Deviation	Std. Error mean	F	Sign
Experimental Previous Scores And Post-Test Scores	between groups	53.3500	40	10442.450	1	10442.450	12.88320	2.03701		
	within groups	76.2000	40	12697.500	78	162.788	12.63329	1.99750	64.147	.000
	Total			**23139.950**	**79**					
Control Group Previous And Post Scores	Between Groups	54.5000	40	557.113	1	567.133	10.63329	1.59607		
	Within groups	76.2000	40	5175.775	78	66.356	5.55110	.87771	8.547	.005
	Total			**5742.888**	**79**					

Source: Researcher field survey 2018.

12. Discussion of Findings

Both the experimental and control groups were compared with the variable of previous performance. The result obtained from the statistical analysis showed that no significant difference existed between the two groups with respect to pervious performance in Fine Arts, as t-value obtained was not statistically significant at 0.4 level (Table 1). Hence, both the groups could be treated as equal.

HO_1 The performance of the experimental group was significantly better than that of the control group on post-test. The difference between the two means was statistically significant at 6.8 t-value level (Table 1). Thus, the null hypothesis that, there is no significant difference in the mean secondary school students' Academic Performance in Fine Arts when exposed to CAIM and when not exposed, was rejected as at 6.8 test value Level in favour of the experimental group. These findings support the findings of the studies conducted by [29,30].

HO_2 By applying 2 X 2 analysis of variance (factorial design), it was revealed that the F-value obtained with "Experimental group post-test scores and Control group post-test scores" as the source of variance was statistically significant at 56.33 frequencies. Therefore the above results in Table 2 revealed that the performance of the experimental group was significantly better than that of control group on post-test on the variables of overall performance and performance level of the students.

HO_3 From the result in Table 4 experimental group mean was 77.8 and that of control was 60.7 and the difference between the mean which was significantly statistically at 21test-value Level on the variable of post experimental performance in fine arts portray the hypothesis that gender performance and enrollment in fine arts when exposed to computer assisted instructional media to be very correct.

HO_4 The Table 4 and 3 disprove the null hypothesis that, there is no significant difference on the positive effect manifested on students with natural creative ability and those without when exposed to CAIM where those with creative ability means scores for post experimental and control groups was 85.77 and 65.05 respectively. Those without creative ability was 65.50 and 56.35 respectively. This portrays that much improvement is recorded on students with natural creative ability and those without when exposed to CAIM.

HO_5 Twenty six students (26) out of 40 strongly agreed while nine (9) agreed ensured the null hypothesis that students expressed good perception on computer supported instructional media when exposed CAIM.

HO_6 The results in Table 6 indicates proves the null hypothesis that there was difference in performance in fine arts of secondary school students exposed to individualized CAIM than those exposed to conventional instructional/method thus the mean score of the experimental group was 81.9 and that of the control group was 55.8. The significance difference between the means was so at 44 test value Level thereby viewing both the groups as unequal on the variable mean score of experimental group in Fine Arts.

The overall results of the study indicate that CAIM, as a back up strategy to support traditional teaching methods, improved students' performance in the subject of Fine Arts at secondary level with higher performance gain for the students. The result of the study were in line with those of pervious researches carried out in other cultures. However, individual variations were found regarding the impact of CAIM on high performers and low performers as evidenced by the significant interaction effect. The results, especially about high performers corroborate the observation of [31] regarding the research into students' use of back up approach to individualized learning that middle-ability- to better students make more use of , and benefit more from, individualized learning material than weaker students for whom the supplementary strategy was mainly intended. The results of the study show better performance of low performers and higher performers even perform best.

13. Summary, Conclusion and Recommendations

13.1. Summary of Findings

This study was designed to see the Effect of Computer Assisted Instructional Media on the Secondary School Students Academic Performance in Fine Arts. The major objectives of the study were:

(1) To find out the relative effect of Computer Assisted Instructional Media (CAIM) as a supplementing and important strategy on the academic performance of students in fine arts.

(2) To explore the difference between treatment effect on students with natural creative ability and those without.

(3) To find out the influence of gender on performance and enrolment of students in fine arts when exposed to computer assisted instructional media. (4) The study also examined the student's reactions about computer supported instructional media.

(4) Determined the differences in performances of students exposed to Computer Assisted Instructional Media and those exposed to conventional instruction.

Secondary school students studying Fine Arts subject constituted the population of the study. The SS11 Fine Arts students drawn from the Ebonyi State College of Education secondary school were selected as sample for the study. Sample students were assign to groups i.e experimental group and control group. Both the group were equated on the basis of their performance scores in previous semesters examination in the subject of fine Arts. Each group comprises of 40 students.

There were two different treatment (teaching) methods applied during the experiment. Both the groups were taught through practical method by same teacher. The computer Assisted instructional media was used as additional strategy for the experimental group. During the experiment period, the experimental group received the treatment of independent variable, i.e Computer Assisted Instructional Media whereby the experimental group was exposed to computer where you can use it to draw or do any other arts works. In the meanwhile, the control group was given the same activities guided practices and independent practical. This was adopted to control the variable of time and to realize the primary objective of the study. The experiment continued for three weeks. In order to find out treatment (teaching) effects, a teacher-made post-test (practical) was administered to the experimental as well as the control group immediately after the treatment (teaching) was over. The purpose of this test was to measure the performance of the students consisting the sample of the study. Finally, data were collected from 80 students (40 from each group) who remained regular throughout the experiment.

The performance scores of the sample were obtained as a result of the post-test. After obtaining the scores, the lists were prepared for each group and the means, standard deviations, differences between means were computed. Significance of difference between the mean scores of both the groups on the variable of previous performance was tested at .04 level by applied t-test.

To see the treatment (teaching) effects for gender as well as natural creative ability and those without natural creative ability on level of performance of both groups, factional design (2 x 2 analysis of variance) was applied. For the purpose. of this study the students of both groups were divided into two halves, namely, high performers (above the mean score) and low performers (below the mean score) on the basis of score on previous performance test.

Analysis of data revealed that the students taught through computer assisted instructional media as a supplementary strategy performed significantly better. The computer assisted instructional media (CAIM) was found equally effective for the both male and female. The students with natural creative ability showed best result while those without performed better.

14. Conclusion

On the basis of statistical analysis and the findings of the study, the following conclusions were drawn:

1. The application of Computer Assisted Instructional Media as a supplementary strategy in teaching of fine Arts was found to be more effective.
2. Though Computer Assisted Instructional Media as supplementary strategy was found have more in influencing on female performance and enrollment in Fine Arts.
3. Computer assisted instructional media proved to be more effective for the students with natural creative ability of experimental group and enhances those without.

15. Implications of the Study

1. It will enable us the effect of Computer Assisted Instructional Media (CAIM) as another important strategy in improving the academic performance of students in fine arts and other subjects.
2. It will help to improve and encourage those students without natural creative ability who are appreciating and willing to do fine arts.
3. It will also erase the miss conceptions people have about fine art that it is meant for the gifted people and male only as it is proven to have influenced gender on their performance and enrollment in fine arts when exposed to computer assisted instructional media.
4. Instructors/teachers will now know that CAIM is the easiest teaching and methodology.
5. Educational sectors will know be encouraged in providing computers and other related instructional materials to school in the beat to improve standard of education.

16. Recommendations

In the light of the findings and conclusions drawn from the study, the following recommendations are made:

1. An experiment with the students from different cultural backgrounds such as urban and rural areas is needed to examine the effectiveness of computer assisted instructional media as a supplementary strategy.
2. An experiment with greater number of students from different secondary schools, representing a wider range of intelligence, be planned to examine the results of this study.
3. The teachers of different subject areas, especially for rural schools, be trained in the use of computers in the classroom.
4. The present study was conducted to see the effect of computer assisted instructional media as a supplementary strategy in teaching of fine arts. Such studies are needed to be planned and conducted in other subject areas such as mathematics and social sciences.
5. The control and experimental groups were not organised on the basis of sameness of chronological age of the students. The present study, therefore, points to an area which needs further research.
6. Softwares should be developed by the soft ware developers that enhance the use of CAIM and made available to schools.
7. Teachers of fine arts and other fields of studies should be trained on how to use CAIM in teaching and learning.

References

[1] Fullan, M. (1991). The Meaning of Educational Change, London, Cassell press.

[2] UNESCO (2002) Information and Communication Technology in Education-A Curriculum for Schools and programme for Teacher Development. Paris: UNESCO.

[3] Timothy T. (2007). Assessing the computer attitudes of students: An Asian perspective. Computer in Human Behaviour. [Online) Available: ed.). Upper Saddle River: Prentice Hall Inc. http://www.compu.edu./aa.fac/cc. html. (April 12, 2010).

[4] TraynorP .L (2003) Effects of Computer Assisted Instruction on different learners. Journal of Instructional Psychology, vol. 30, No. 2 June.

[5] Oranu, R.N. (2003). Vocational and Technical Education in Nigeria. Retrieve on July 18 2005 from http//:www.ibec.unesco.org.

[6] Ali, A (2003). Instructional Design and Online Instruction: Practices and Perception. Techtrends. 42-45.

[7] Chambers, A. J and Sprecher J. W (1983). Computer Assistant Instruction. Prentice-Hall, inc. Englewood Cliffs, N. J USA. 92-93.

[8] Skinner, B.F. (1968). The technology of teaching. Appleton-Century-Crofts, New York, USA. 57.

[9] Bower, G.W. and HilgardE .R (1981). Theories of Learning. Prentice-Hall, Englewood Cliffs, N.J., USA. 113.

[10] Gagne, R. M. (1982). Development in learning Psychology; Implications of Instructional Design and Effect of Computer Technology in Instructional Design and development. Educational technology. 11-15.

[11] Bandura, A (1977). Social Learning Theory. Prentice-Hall, Englewood Cliffs, N.J., USA. 22-30.

[12] Adekemi A. A. (2001). Introduction to Computer Education. An Unpublished Monograph, Obafemi Awolowo University, Ile-ife.

[13] Ajibade A (2006). Effects of Interactive Instructional Compact Disc Pac-kage on the Performance of English Language Learners in Schools of Science in Osun State. Unpublished Ph.D. Dissertation, Faculty of Education, Obafemi Awolowo University, Ile-Ife.

[14] Adekola, G. (2008). Methods and Materials Utilisation in Adult and Non - Formal Education. Ibadan: Gabesther Educational Publishers.

[15] Nzeneri, I. S (1996). Handbook on Adult Education: Principles and Practice Onitsha: Goodway Printing Press Ltd.

[16] Davidson, N and kroll D. L (1991). An Overview of Research on Cooperative Learning Related to Mathematics, Journal for Research in Mathematics Education. 362-365.

[17] Cotton, K. (2001). Computer-Assisted Instruction. Retrieved June 23, 2001, from http://www.nwrel.org/scpd/sirs/5/cu10.html.

[18] Harrison, P. (1981). Inside the Third World. London: Penguin.

[19] Dence, M (1980). Toward Defining the role of Computer Assisted Instruction; A review. Educational Technology. 50-54.

[20] Hatfied, M.M (1991). The Effect of Problem-solving Software on Students' Beliefs About Mathematics; A quantitative Study computers in the schools. 21-40.

[21] Bracey, G. W (1982). Computer in Education: what the research shows. Electronic learning. 51-54.

[22] Russell W. E (1982). The Effective Response of Students to Computer Assisted Instruction. Paper presented in the 1982 conference, association for the computer-Based Instructional Systems. Western Washington university, Washington, USA. 45.

[23] Usha, R.V (2003). Educational Broadcasting in the Commonwealth New Delhi: Asira Publishers.

[24] Kulik, J.A., Kulik, C.C. &Bangert-Drowns, R.L. (1985). Effectiveness of Computer-Based Education in Elementary Schools. Computers in Human Behavior 1, Retrieved June 20, 2001, from Wilson Web database. 59-74.

[25] Rupe, V.S. (1986). A Study of Computer-Assisted Instruction: its Uses, Effects, Advantages, and Limitations. South Bend, IN: Indiana University. 51.

[26] Miller, L.W. (2002). Computer instruction by vocational teachers education. University of Idaho Journal. 1-12.

[27] Kulik, J. (1995). The effectiveness of computer - based audit education: A meta - analysis. Journal of Education Computing Research. 2,235-252.

[28] Farooq, R. A (2001). Understanding Research in Education. University Institute of Education, University of Agriculture, Rawalpindi, Pakistan Press Print. 90.

[29] Goode .M (1988). Testing Computer Assisted Instruction Courseware in Fifth and Sixth Grade Mathematics. T.H.E. 97-100.

[30] Harrison, N. (1993). The effect of drill-and-practice computer instruction on learning basic mathematic journal of computing in childhood education. 49-56.

[31] Percival and Ellington (1988) A handbook of educational technology. Kegan page, London UK. 84-85.

[32] Kulik, J. (1995). The Effectiveness of Computer Based Audit Education: A meta - analysis. Journal of Education Computing Research. 235-252.

[33] Vikoo, B. (2003). Learning Theories and Instructional Processes. Owerri; Springfield Publisher.