

## Computer Literacy as an Obstacle to Teachers' Effectiveness in Instructional Technology

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### **Abstract**

*This research work titled **Computer Literacy as an Obstacle to Teachers' Effectiveness in Instructional Technology** was instinctive due to teachers' poor knowledge in computer applications and operations in Nigerian Schools. The paper critically surveyed the intricacies of instructional materials, types and usage points. Pictures of various types of instructional materials were depicted. The paper postulated the usefulness of the computer as the centre of excellence in the educational systems. The roles of computer in the school system and its importance in teaching were unveiled. The problems associated with computer literacy among the teachers in Nigeria were equally revealed. The paper summarized with proposals capable of resolving this postage among teachers in Nigeria.*

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**Keywords:** Education: Teacher: Instructional materials: Educational technology: Schools: Aids: Computer: Networking: Literacy: Analogue: Digital: Effectiveness: Obstacle: Impediments: Computer education.

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### **Introduction**

Education is a life-long course of action that involves teaching, learning, good environment as well as teaching aids. Since life is progressive, so is learning and things that makes learning to be worthwhile. Therefore, primitive nature of learning differs significantly from the learning models of the 21<sup>st</sup> century. For learning to be meaningful to the learner, it must involve a good learning environment, useful teaching and meaningful learning programs. The driving-force of any meaningful learning process is bestowed on the teacher, and for the teacher to be effectively productive to deliver a meaningful lesson capable of producing a meaningful learner, there must

be meaningful teaching aids. Having a meaningful teaching aid is an aspect but the usage is the highest level task of the teacher.

All learning is programmed towards achieving meaningful change in behaviors of the learner. Skinner, Bruner and other psychologists perceived learning as a continuous process of learning that takes place in the mind and brain interactions while other theorists like Ausubel maintained that learning is not just mere mind and brain activity but involves hands-on activity processes. Learning being a complex, multifarious and divergent activity equally has different schools of thought as how learning takes place. The most popular among them are the behaviorists' theorem, constructivists, socialists and the constructionists. There are other theorists of learning such as the cognitive and meta-cognitive theorems. The important aspect of all the theories summarized that the learner should be able to demonstrate a positive change in behaviors capable of solving societal problems.

Ausubel in the mid 60's propounded a learning pattern known as theory of constructive learning. In his views, no meaningful learning can occur with rhetoric process rather learning can only be useful and meaningful to the learner and the society if the teaching-learning process is combined with good environment, learner's meaningful choice, meaningful curriculum, knowledgeable teacher and meaningful teaching aids. Ausubel further maintained that learners assimilate contents deeper only when they see things with their eyes, do things by their selves or when contents are depicted in pictorial forms. This postulate is promoted by earlier theories of Kant in 1700s who described learning as ephemeral and ideological which must behoove on past experiences and symbols. Hegel in 1800s supported this opinion when he stated that learning is a process of mental activity which must incorporate the brain, mind, hand and materials.

The teacher during teaching activities uses some materials to illustrate meanings to the learner. According to Eluozo (2018), no learner comes into learning environment without any form of experience. Eluozo stated that every learner must have heard, seen or done some things at home even though those things may not be correctly heard, seen or done. Therefore the main aim of using teaching materials is to draw inference to the learner, make the learner to recall, remember, hear and do things similar to the ones he/she has already done at home correctly.

Instructional materials vary from real things, species, specimen, graphics, sound, visuals, audio-visuals and animations.

Far back in the 80's when instructional materials were merely what the teacher can use or improvise made learning more of didactic, but since the era of computer aided teaching in the 90's instructional technology has become more conspicuous in the 21<sup>st</sup> century, teaching-learning situation has wore a new look and those who are disadvantaged in computer knowledge finds it difficult to cope with their jobs.

How computer illiteracy is a barrier to effective use of instructional aids in the recent times shall be the focus of this paper.

### **Concept of Instructional Technology**

Teaching being a complex task and profession of a well trained teacher has some ingredients that make it successful as follows;

1. Good teaching and learning environment
2. Good and meaningful curriculum
3. Teacher's rich knowledge of the subject matters
4. Learner's choice of learning
5. Teacher's good attitudes to teaching
6. Societal values for the learner and the teacher
7. Availability of teaching aids
8. Teacher's good knowledge in the use of the aids
9. Teacher's motivation by the employer
10. Modern knowledge in the use of computer gadgets

Beside these ingredients, instructional technology is a field of study in education more especially in the postgraduate level that deals with the ethics, practice and the theories of improving learning and performance through designing, creating and maneuvering of raw materials into useful resources for teaching. This aspect of education is tedious, creative and lucrative in nature. It entails creativity, construction, planning and usage.

### **Educational technology**

Educational technology is the scientific and technological study of materials sourcing, construction, blending, communication skills, teacher's conducts, mannerism, positioning and the application of teaching aids in education.

Educational technology is as old as teaching; it was firstly introduced as a course in the United Kingdom during the education revolution period in the 1960s. Since then it has continuously gained patronage by curriculum planners in various countries and later made compulsory in the 80s as a mandatory course in the teachers training institutions worldwide.

### **Instructional Materials**

Instructional material is anything that the teacher uses in the classroom or outside the classroom to promote and facilitate teaching-learning process capable of instituting meaningful knowledge to the learner.

### **Examples of Teaching Aids**

#### **1. *Human beings***



The picture above is scout personnel. The real person could be invited to the classroom during lessons bothering on civil order in civic education and social studies. In the absence of the resource person, the picture displaying the character under review can be used by the teacher during teaching for the learners to see and appreciate.

#### **2. *Specie***

Specie is samples or units representing an entire group of organisms. Species can also mean unique representation of an object where the entire groups cannot be present.



A real cockroach can be preserved as a species of insects, to be used by the teacher during biology class or health science. If the real organism cannot be found, the pictures can also serve the purpose, hence most of the learners may have seen it at their homes.

### 3. Specimen



Most times, species are misconstrued as specimen. While species are complete status of an organism, specimens are parts, or constituents of an organism. Example is blood bank depicted above which its specimen can be used for an experiment during lessons bothering on blood group, genotypes and disease controls etc.

### 4. Chalkboards



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The chalkboard is the primary teaching aid of the teacher. Before the advent of marker boards and other modern boards the chalkboard although still in use in some third world countries is the first assignment of the would be teacher. The skills and methods of using the boards are learnt specially hence if not properly understood, the teacher will end up painting himself with chalks. It is the board that displays the learning contents as well as represents the teacher's thought graphically. Chalkboard is an important teaching material that varies in type, shape and size.

### 5. *Airports, Motor parks and Seaports*



Motor parks, seaports and airports are institutions that can aid teaching. The teacher can use these establishments as teaching materials. These establishments are usually used in fieldtrips and excursions for children to see things by their selves. Topics that teachers may apply this method are usually types of transport system found in social studies and civic education.

### 6. *Gardens and Zoo*



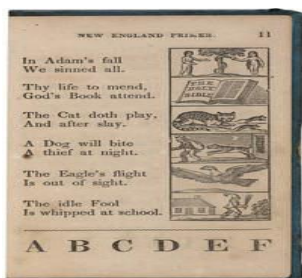
Gardens are sometimes found in the school environment where the teacher takes the students for expositions in nature studies, agriculture and geography. The same applies to the zoo but zoos are majorly government establishments that the teacher takes the students for a tourism and illustration of contents that have been learnt theoretically.

### 7. *Laboratories and Libraries*



Laboratories and libraries are school establishments that the teacher uses to facilitate learning and teaching. The laboratories are used for physics, biology, chemistry and other science subjects to demonstrate chemical reactions, movements, growths and other scientific inquiries while the libraries are used to teach good storage habit, importance of archives, encouragement of reading habits and assignments to discover information etc.

### 8. Textbooks



Textbooks, magazines, newspapers and other papers are some of the teacher's instructional materials that he uses to explain concepts to the students. They are mostly used in literatures, mathematics, reading, current affairs and history classes.

### 9. Relics



Relics are teaching aids that represent the real object under review. The skeleton is an example of a relic. Most of the skeletons are made from rubber materials to look exactly like the bones of human beings. Relics are mostly used in biology.

### 10. Analogue Materials and Digital Materials

Instructional materials are mechanically categorized into two groups of analogue and digital. Analogue materials are those ones that its operations and usage are manually operated. Examples of analogue materials are chalkboards, hardcopy books, transparencies and black/white pictures while digital instructional materials are the materials that the teacher uses with the aid of electrical and electronics devices such as the projector, computers and digital cameras.

## Synopsis of analogue and digital materials



### Marker board

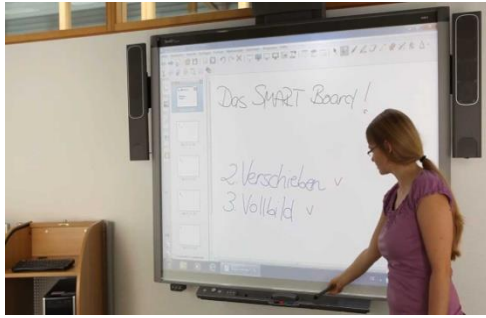
Marker boards replaced the archaic model of chalkboards. They are easily used and cleaned with a duster without painting the whole class with chalk particles.



### Digital camera

Digital cameras replaced the analogue process of film productions in the darkroom. This device is used by the teacher to cover occasions and programs, take pictures that will later be displayed in the classroom for clarity of purposes.





### Digital Smart Board

Digital smart boards are display boards that are configured with computers and projectors. This board enables the teacher to write, draw, insert, demonstrate and navigate at will without stress. Items can be deleted without stain, everything is done digitally.



### Print Board

Print boards are advanced prototypes of smart boards; the major difference is that the print board can prints any document from the contents being taught directly from the board without external printer while the smart board prints via the attached computer to the external printer.



### Computer set

Computer is a full configurations of audio, visual and internet devices into one single functional unit. Examples of the computer systems are; the calculator, handsets, digital watches, goggles and cameras. Computer is the most effective aid of the teacher in recent times. It can do virtually all the functions of other materials. The computer is classified into two basic units namely; hardware and software. The hardware comprises of the parts we can see and touch such as, the monitor, central processing unit (CPU), uninterrupted power supply (UPS), disc rum, hard drive, mother board and flash drive etc, while the software are components we can feel but can't see or touch but sometimes there symbols such as the window programs, networking, internets and anti-virus etc.



### Digital projector

Projectors are amplifiers that boast and projects images in a larger view on screens. They are connected with the computer as transducer of sounds and images for mass view in a larger classroom setting.



### Film strips, slides and rims

Film strips, slides and rims are image display gadgets that are inserted into the slide projector to display films and images designed and printed in different places for the purpose of the lesson. This type of projection is different from the one above. The one above is computer base projector that projects films, images and videos from drives, discs and computer memories.



### Audio rim and cassette players

Audio players varies in types and shape, some are disc, plate, rim or cassettes. They are used by the teacher to record and replay events, stories and scripts writing mostly in literature and English lessons.



### Printer

Printer is the hardcopy image producer of the computer system. It is used in printing of articles, pictures and films by the teacher for reference purposes.

## **Computer**

Computer is the conglomeration of electrical components and electronics chips as a system that receives, process, stores and reproduces information as inserted by the end user. Computer history can be dated back to 1622 when Williams Oughtred firstly invented the slide rule. The term computer became famous in the years 1833-1871 when Charles Babbage developed his analytical engine used for computing figures which formed the basis for further research and modernization to the era of tube computer, large frame and analogue computers and the present day micro chips computers. The conglomeration of the computer system is complex so also the applications and operations.

## **Computer Literacy**

Computer literacy is the knowledge of computer science, computer education, computer technology, computer engineering, computer networking, computer applications and operations. The use of computer is so vast that no one person can completely know it all about the computer but the basic knowledge is so essential to all educationists in this 21<sup>st</sup> century.

## **Uses of Computer in Education**

Computer is the mother base of all knowledge in this present era. Computer helps the school and the teacher in the following ways;

1. To advertise the school for admissions
2. Keep biometric records of the students
3. To compute the school population
4. To process nominal rolls
5. To search for current information
6. Type scripts
7. Mark examination papers
8. Rank the students according to grades
9. Track students movement
10. Help in securing the school environment through closed circuit televisions etc.

## **Usefulness of Computer in Instructional Technology**

Computer is very useful to the teacher in delivering meaningful lessons in the classroom. The use of computer has replaced chalkboard which usually litters the classroom with carbons of chinks. The combinations of the computer with projectors have equally addressed the problems of crowded management as one teacher can reach out to over 100 learners at a time. This measure has also

assisted in addressing the problems of shortage of teaching staff in accordance to teeming populations.

Computer has solved the problems of film production. In the past, film production for graphic display usually involve the use of hazardous chemicals, darkroom processes and the consumption of time to make one film, but with the advent of computer films can be made spontaneously and printed at the same spot.

Computer has assisted the teacher to reduce the cost of buying textbooks and sourcing of raw materials. The use of softcopy books, newspapers and journals has made teaching very easy and simple for the teacher.

The development of cartoons and animations has assisted the teacher so much in televising establishments that would have ordinarily cost time and money for field trips and excursion. The computer has also reduced air, road and water accidents of the teacher and students moving from one distance to the other in search of raw materials.

In reality, the functions of the computer cannot be fully itemized in one mimeograph therefore computer literacy should be heartened for all teachers to be acquainted.

### **Impediments of computer illiteracy to the teacher**

Computer being the centre of excellence for effective implementation of instructional technology, teachers' lack of computer knowledge will be an impediment to successful implementation of the scheme. From reports available, only few teachers are computer literate in Nigeria. This situation has caused a lot of challenges to the teachers in discharging their duties effectively in educational technology.

### **Challenges of Computer Literacy in Nigeria**

So many problems associated with Teachers' computer literacy in Nigeria are enumerated as follows;

1. Teachers' choice and willingness for computer education.
2. Lack of in-service training for teachers on computer programs.
3. Financial paucity for self training programs on computer education.
4. Epileptic power supply to feed the computers of those who have it.
5. Poor internet service for sourcing of information.
6. High cost of computer gadgets.
7. Time factor to combine computer training with conventional jobs.

## **Conclusion**

Right from the origin of education in the 6<sup>th</sup> century B.C., contemporary education has experienced fabulous intensification, and unvarying labors to improve the quality of the learners. The era of instructional technology has signified a very imperative characteristic of these efforts. This piece was concerned in screening how improvements have occurred in the use of instructional aides leading to the present systems approach of instructional technology through the use of computer. Basically, instructional materials are classified into three broad units, being the printed media, audio and audio-visual Medias. The computer has proven sufficient substantiations in solving the problems associated with instructional technology. The computer has combined the three roles of the units as broadly classified. The development of graphics through the computer is basic to the production of other instructional media materials through the computer. They can be used directly as posters in the form of graphs, charts, diagrams; maps etc in a classroom and can therefore satisfy students' basic needs in small group instruction. Transparency production is the first short step of putting graphics materials on transparencies. Graphics and transparencies are therefore more closely related and are considered basic instructional materials. The production of instructional materials is tedious and due to the industrialization processes, most of the raw materials are now far reached. The popular instrument that serves universal purpose of instructional technology is the computer.

## **Recommendation**

Based on findings from this study, the following recommendations are made;

1. Government and schools employers should train her staff on computer programs.
2. Teachers should endeavor to improve on computer literacy.
3. Schools should ensure stead power supply to their schools to enable the use of computers improve among the teachers.
4. In-service trainings should be organized for the teachers during holidays to solve the problems related to time factors.
5. The use of computers assisted teaching should be made compulsory in all the schools systems in Nigeria.
6. Computers should be subsidized for teachers by the schools proprietors.
7. Teachers should develop the habit of computer usage in teaching.

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