

Module 03: Educational Technology

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Introduction to the Module

This module contains information about educational technology. It explains the concept of educational technology as being both a theoretical and practical field. The various definitions of the concept are explained. The module also emphasizes on media, models of communication and an all-inclusive discussion on the selection and use of instructional media are also discussed. The course explains the systematic planning of the use of instructional media for teaching and learning using the ASSURE model, conditions essential for the utilization of media and materials in lesson presentation, factor militating against effective use of instructional media in Nigerian higher institutions, and, audio and audio-visual media in instruction. The application of Computer, ICT in Teaching and Learning are also discussed in this course.

How to use this Module

The module is prepared to provide an insight on how fundamental the concept of educational technology is to the improvement of teaching and learning with emphasis on the achievement of stated objectives and improved learners' performance. As an individual, you should be able to work through it at your own pace.

The module contains ten sub-units with necessary theoretical and practical activities, and self assessment exercises designed to reinforce the information and to enable you to develop and practise the content. In addition, teacher marked assignments are provided at the end of each unit. These are designed to assist you in the achievement of the learning outcomes for these units.

Rationale

Lecture presentation requires integration of appropriate technological products and processes in order to enhance effective teaching and learning of concepts. This course has therefore, been prepared in conjunction with pedagogical, sociological, psychological and philosophical courses in PDDE programme to help learners acquire skills in the design, production, selection and utilization of instructional media for lesson presentations. It is also hoped that the course will assist students to communicate effectively and efficiently during lecture presentations.

Course Objectives`

At the end of this Module, you should be able to:

1. Define educational technology and explain the elements of the definition;

2. Describe media, instructional media, communications and instruction; and state the interrelationships among them;
3. Discuss types and values of instructional media;
4. Select and utilize appropriate instructional media for teaching and learning;
5. Enumerate the conditions essential for the utilization of media and materials in lesson presentation;
6. Integrate appropriate technology (such as information communications and technology) into teaching and learning;
7. Design and produce instructional materials from local resources; and
8. Identify/explain and operate basic instructional equipment for teaching and learning.

Course Requirements

You will have access to your course materials through the Unilorin **MyUIL Virtual Classroom** which will provide an online environment for individualised learning resources, information, and services. You are expected to read this module, and other recommended course materials (textual, video and audio). You must also be actively involved in the online classroom environment through online interactions via e-mail group, online discussions, blogging, and other social media pathways. Where necessary you are expected to participate in live sessions. You must submit your assignments on or before the stated scheduled dates as may be determined by your tutor.

Time

Coverage of the Module will require about 120 hours

Materials

You need the following materials and resources to help you go through the module:

A computer with internet access

Web based Materials

Online resources

Recorded Materials on CD-Rom/DVD

Any of the recommended references (Optional)

Assessment of the Module

Assessment of this module will be in two parts. Part 1 is written assignments that will cover the contents outlined for the module. Part 2 is an e-portfolio that will be developed by you with guidance from your tutor. This portfolio will enable you to apply the content outlined in this module.

Note that you need to interact with your tutor as regards the scheduling and assessment of e-portfolio.

Unit 1: Definitions of Educational Technology

Content Outline

- Introduction
- Objectives
- AECT's definition
- Hackbarth's definition
- Roblyer's and Reiser's definitions

1.0 Introduction

In this Unit, our focus shall be on the definition of Educational Technology. You should note that there have been different attempts to define educational technology by different authors at different times. However, an acceptable definition of educational technology must take note of all the important elements identified in this unit. Before we commence, watch the video that follows, and share with your colleagues your view of the definition.

<https://www.youtube.com/watch?v=Q1PzO2kopRc>

2.0 Specific Objectives

After completing this unit you should be able to:

- 2.1 Define the concept of educational technology from at least three perspectives;
- 2.2 Identify the key elements in the definition of Educational Technology.

3.0 Main Content

3.1 AECT's Definition

The concept of educational technology is defined by **Association for Educational Communication and Technology** (AECT 2008) as "the study and ethical practice of facilitating learning and improving performance by creating, using and managing appropriate technological processes and resources" P.1 (AECT, 2008). The key elements in the definition are identified as study, practice, creating, using, managing, technological processes and resources, facilitating learning and improving performance.

Study in this definition involves both information gathering and analysis. Facilitating of learning includes design of environment where learning will take place or organizing resources for learning.

Creating of processes and resources involve design and production of instructional materials and learning environments

Using of processes and resources is concerned with their utilization in a learning environment

Managing of resources and processes applies to organizing human and resources using managerial skill such as planning, controlling and monitoring.

Technological resources and processes- technological processes include systematic steps or stages involved in using, creating and managing resources. Resources are people, tools, and technologies such as instructional DVD's, visuals, audiovisuals and other instructional materials. The key role of technology is to support learning.

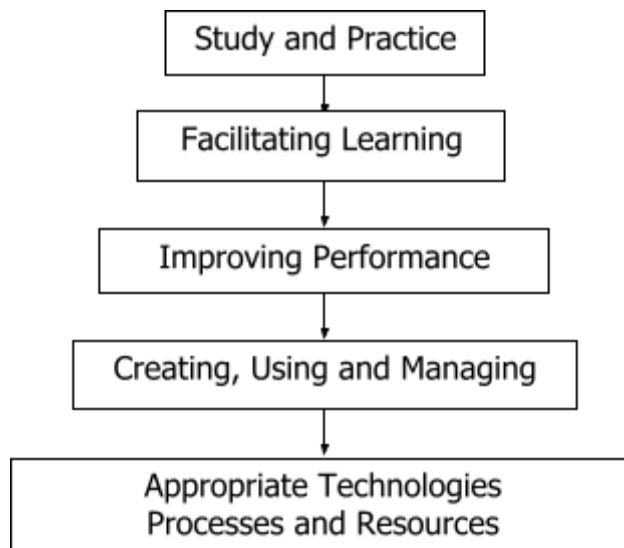


Figure 1: Key Elements in AECT (2008) Definition

3.2 Hackbarth's Definition

Hackbarth (1996) defined Educational Technology as a systematic process involving application of knowledge in the search for replicable solution to problems inherent in teaching and learning. It includes products of this process. ET is a profession and specialty.

The major aim of ET is cost effective achievement of measurable learning objectives'. In this definition products of process include programmed texts, television programmes and computer software. Audiovisual media, multimedia

presentation, self instructional programmes and integrated learning systems are closely associated with the concept of Educational Technology.

Educational technology is also a profession because there are various professionals with various job categories in the field. For example lecturers of educational technology teach theories and practical skills regarding methods and techniques of facilitating learning. Technologists and technicians in the field install, operate and maintain equipment with the core aim of improving performance and facilitating learning.

3.3 Roblyer's and Reiser's Definitions

Definition of Educational Technology is not limited to the ones discussed above, because there are various perceptions which have shaped various definitions. These perspectives include (i) media and AV communications; (ii) instructional systems and instructional design, (iii) vocational training (a.k.a technology education), and (iv) computer systems (a.k.a educational/instructional computing). (Roblyer, 2006, p.3).

It is the last of the above perspectives that has shaped the definition of Roblyer (2006) as follows: "Educational technology is a combination of the processes and tools involved in addressing educational needs and problems, with an emphasis on applying needs and problems, with an emphasis on applying the most current tools computers and other electronic technologies' (p.9).

Instructional system and instructional design is the perspective that shape Reiser's (2007) definition which is partly quoted below:

The field of instructional design and technology (also known as instructional technology) encompass the analysis of learning and performance problems, and the design, development, implementation, evaluation and management of instructional and non-instructional processes and resources intended to improve learning and performance in a variety of settings particularly educational institutions and the workplace... (p.7)

Application of any of the perspectives of Educational technology by a lecturer would depend on his immediate need. For example a lecturer who intends to apply computer and ICT in teaching would find Roblyer's (2006) very useful. On the other hand, one who intends to create an instructional package may apply AECT (2008) definition.

Self Assessment Exercise

1. Mention and describe all the definitions in this unit.
2. Choose one of the definitions which you think may likely be most appropriate for application in your subject area.

3. Do you envisage any discrepancies between AECT's (2008) and Roblyer's (2006) definitions?

4.0 Tutor-Marked Assignment

1. Identify and describe five technological processes and five technological resources which could be used in teaching and learning.
2. Choose one of the technological resources you have identified and describe how it can be incorporated into teaching a concept in your subject area.

5.0 Summary

By now you ought to be able to:

- (i) Define the concept of Educational Technology from various perspectives which have been discussed;
- (ii) Analyze the key elements in AECT's (2008) definition.

6.0 Further Resources

Hackbarth, S. (1996). *The educational technology handbook: A comprehensive guide: Process and Products for Learning*. New Jersey, Englewood Cliffs: Educational Technology Publications.

Reiser, R. A. (2007). What field did you say you were in? Defining and naming our field. In R. A. Reiser and J. V. Dempsey (Eds.), *Trends and issues in instructional design and technology* (2nd Edition). Upper Saddle River, New Jersey: Pearson/Merrill Prentice Hall, pp.2-9.

Roblyer, M. D. (2006). *Integrating educational technology into learning*. Upper Saddle River, New Jersey: Pearson/Merrill Prentice Hall,

Januszewski, A. & Molenda, M. (2008) *Educational technology – A definition with commentary*. New York: Lawrence Erlbaum.

Unit 2: Media and Communication

Content Outline

- Introduction
- Objectives
- Meaning of Media
- Definition of communication
- Lasswell's Communication Model
- Shannon-Weaver's Communication Model
- Schramm's Communication Model

1.0 Introduction

In this unit, media, Communication and Instructional Media are discussed. Inter-relationships among these terms are also established in order to be able to incorporate instructional media effectively in lesson presentations.

2.0 Specific Objectives

At the end of this unit, you should be able to:

- 2.1 Define and mention types of media;
- 2.2 Define instructional media, communication and describe at least two models of communication; and
- 2.3 Establish inter-relationships among the terms.

3.0 Main Content

3.1 Meaning of Media

A medium is a "carrier" of message or information. A medium usually stores and transmits information. A message stored on such a medium by the sender could be decoded by the receiver. **What are the various media available? These include newspapers, journals, television and radio.** Instructional media

however are carriers of information or messages which are either designed and developed or selected to enhance effective teaching and learning. Instructional media can be developed by the teacher or they can be selected or be modified version of existing media of communication. Media which could be selected or developed for instruction include real objects, textbooks, charts, models, photographs, audio compact discs and video CD's. Instruction is a planned organization of materials, facilities, equipment and human resources for enhancement of learning. The can better be understood in the context of <https://marketbusinessnews.com/financial-glossary/media-definition-meaning/>

3.2 Definition of Communication

Communication is defined as "a systematic process in which people interact with and through symbols to create and interpret meanings" (Wood, 2006, p.11). It is also referred to as transfer of information from a sender to a receiver. The sender encodes the message which is decoded by the receiver. This process is described in various models of communication such as among others Shannon Weaver (1949), Laswell (1948), and Schramm (1954).

3.3 Lasswell Communication Models

The verbal model consists of five questions:

Who?

Says what?

In what channel?

To whom?

With what effect?

A teacher who plans to communicate could consider the five questions with regard to the following:

Who? – the sender of the message

Says what? – the content of the message

In what channel? – medium or media through which the message will be sent

To whom? – the receiver or recipient of the message

With what effect? – the response or feedback from the receiver.

3.4 Shannon- Weaver Communication Model

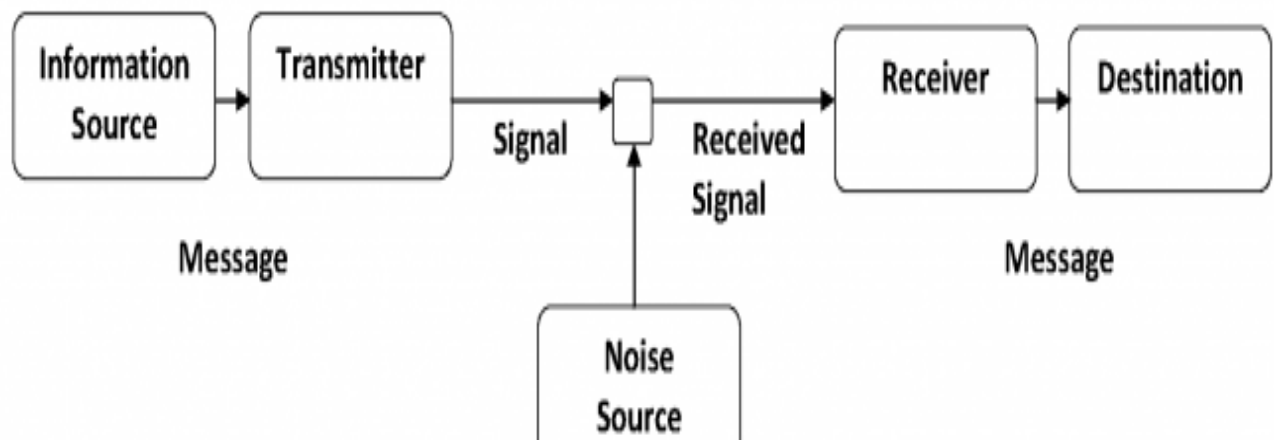


Figure 2: The Shannon-Weaver communication model

Click this link <https://www.youtube.com/watch?v=xuJKEqiv0XQ> before reading through this communication model. The model was conceived with broadcast transmission in mind. However transmission of message has to contend with noise or disturbance. The model shows a message which originate from a sender (information source). The information is encoded and passed on to a transmitter via suitable channel (air) to the receiver (a radio receiver) and then passed on to the destination (e.g. student). Noise factor during message transmission include by lightning.

3.5 Schramm's Communication Model

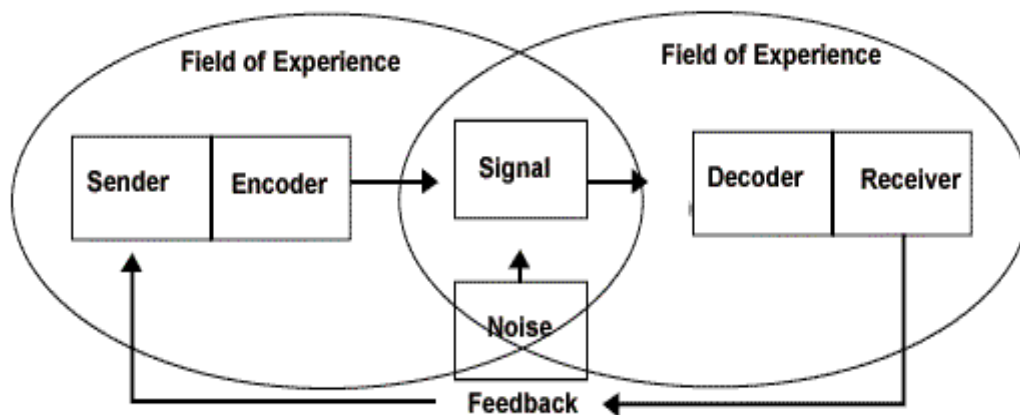


Figure 3: Schramm's Communication Model.

Schramm's adaptation of the Shannon model emphasizes that only when the sender's and the receiver's field of experience overlap there is communication.

Let us click this link https://www.youtube.com/watch?v=nh1_Z36sIMQ&t=82s to see what makes this Shannon model different from Shannon-Weaver communication model

Schramm's Communication Model was adapted from Shannon & Weaver's model. This model emphasizes the need for the receiver to be able to interpret the sender's message. Understanding on the part of the receiver would occur when the "field of experience" of the sender and that of the receiver have considerable overlap. The more the overlap, the more understanding.

Effective communication in the classroom or other learning environment requires minimizing or overcoming noise in order to have considerable overlap of the sender's and receiver's fields of experience.

Instructional media are essential for effective communication because they aid transmission of message either with or without the presence of a sender. For

example, a teacher's verbal message could be more meaningful when pictorial illustration or real experience representing the verbal message is conveyed through media. Sometimes an instructional medium or message intended by a teacher to the students could be delivered without him/her being physically present. Please watch the video in the link that follows for more understanding. <https://www.gcu.ac.uk/study/courses/undergraduate-media-and-communication-glasgow>

What can you say about the media and communication?

Self Assessment Exercise

1. Instructional media are exactly the same as communication media?
 - a. True () False ()
2. Instructional media to be used can only be developed by the teacher who intends to use it for a lesson.
 - a. True () False ()
3. Audiovisual can fall into the category of instructional media.
 - a. True () False ()
4. Shannon-Weaver model of communication presents exactly the same concepts as that of Schramm.
 - a. True () False ()
5. Noise in communication could mean disturbance or interference
 - a. True () False ()

4.0 Tutor Marked Assignment

1. Define communication and Instructional Media
2. How is communication inter-related with Instructional Media?
3. How will you apply each of the following communication models in a teaching-learning situation: (a) Schramm (b) Lasswell (c) Shannon-Weaver?

5.0 Summary

By now you ought to have been able to define media, communication and instructional media correctly. You also ought to be able to apply each of the models in a teaching situation

6.0 Further Resources

Heinich, R., Molenda, M. & Russell, J.D. (1989). *Instructional media and the new technologies of instruction* (3rd Ed.) New York: Macmillan Publishing Company, pp.212-283.

Wood, J.T. (2006). *Communication in our lives* (4th Ed.) Belmont: Thomson Higher Education, pp.17-27.

Unit 3: Instructional Media and their Classification

Content Outline

- Introduction
- Objectives
- Classification of Instructional Media
- Audio, audiovisual and visual classification
- Heinich, et al Classification
- Edgar Dale's/Jerome Brunner's Classification
- Additional Classification

1.0 Introduction

This unit focuses on instructional media. Effort is made to classify instructional media from various perspectives. However, before reading further, click this link <https://www.youtube.com/watch?v=hyxO3ifBNs0> to watch the video.

2.0 Specific Objectives

You ought to be able to:

- 2.1 Describe instructional media;
- 2.2 Classify instructional media in at least three different ways.
- 2.3 identify and cite examples of each of the classification

3.0 Main Content

3.1 Classification of Instructional Media

Instruction media are carriers of messages, which are used for teaching and learning. These media are designed and produced or selected/modified for the

purpose of instruction. These media are traditionally referred to as audio visual aids, teaching aids or apparatus. Instructional media may be classified into three categories as indicated below:

- (a) Audio Media
- (b) Visual Media and
- (c) Audio-Visual Media

Audio Media

They are media, which carry messages that can be decoded solely with the sense of hearing. Such media include among others, audiotape, and audio compact discs. For an indepth understanding of audio media, click this link https://www.youtube.com/watch?v=ddt9SXDdD_E

Visual Media

They are carriers of information which are designed in such a manner that a receiver could decode messages they carry with the sense of sight. Examples of visual media include pictures, wall charts, models and real objects. We shall understand visual media if we take our time to click <https://www.youtube.com/watch?v=78ZKGer1tDQ> and watch the video.

Audiovisual Media

Carriers of messages, which can be decoded by using both senses of hearing and sight at the same time, are referred to as audiovisual media. Examples include audio- tape/slide presentation, videotapes, sound films and so forth. The link <https://www.youtube.com/watch?v=-zHTQbGARQ> will show you what audio-visual media is all about. Instructional media and instructional materials are sometimes used interchangeably. However, the latter phrases (instructional materials) are used in general sense to refer to a collection of items of a medium format or of several media formats, (Heinich, Molenda & Russell 1982).

3.2 Heinich et al Classification

A more recent work by Heinich, Molenda, and Russell, and Swadins (2002) implies that instructional media may be classified into:

1. **Media and Materials:** they include manipulatives (real objects, models and mock-ups), field trips, printed materials and display surfaces.
2. **Visuals:** these are non-projected visuals (still pictures, drawings, charts, graphs and posters) and projected visuals (overhead projection, slides projection and digital -image projection).

3. **Audio:** Audio tapes and audio compact discs
4. **Computers:** could be included among instructional media especially with regards to integrating them in the implementation of curriculum.
5. **Multimedia** may include multimedia kits, hypermedia, and interactive media.
6. **Videos** - include videotapes, digital videodiscs, videodiscs, and Internet videos.

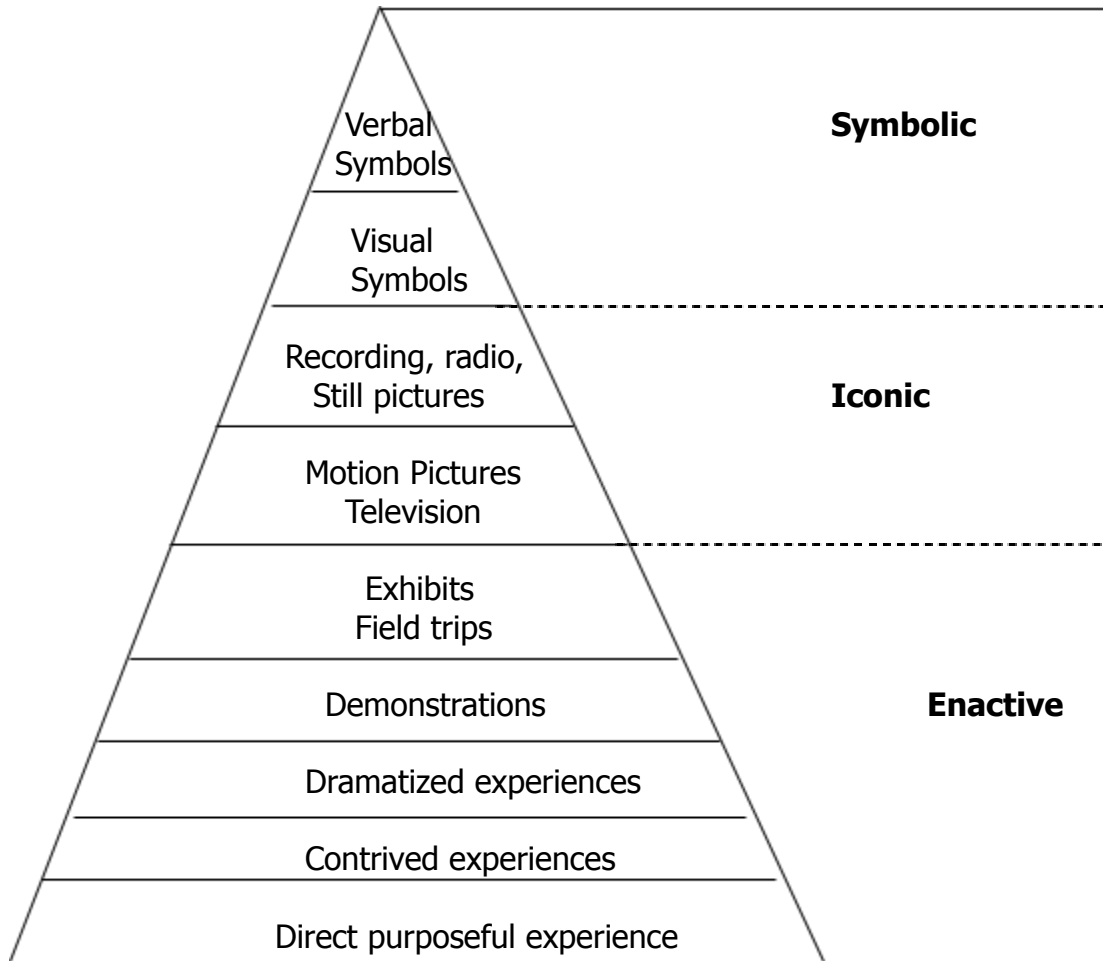
The classification of media in relation to human senses or in relation to experience (concrete versus abstract) helps a user to make sound decision when developing or selecting them for instruction.

3.3 Edgar Dale's/Jerome Brunner's Classification

The cone of experience by Dale (1969) shows, a progression of learning experience from concrete to abstract. Models, real objects, exhibits, specimens and so forth are included among those that provide concrete experience or direct experience. Pictures, audio recordings, drawings, motion films, etc. are those that represent the real or concrete experience, which may be referred to as pictorial experience. Spoken words or written words are regarded as symbolic or abstract experience. Bruner (1966), also provided a scheme of instructional activities which stipulated that instruction should start from enactive experience to iconic representation of experience to symbolic representation. Bruner was of the opinion that his scheme is applicable to all categories of learners irrespective of age. Heinich, et al (2002) state that "when a learning task is presented to adults who have no relevant experiences on which to draw, learning is facilitated from actual experience to iconic representation to symbolic or abstract representation". (p.11). Although, Bruner was working from another perspective, he classified learning experiences into three types. His division could be matched with Dale's cone of experience as follows:

S/N	Bruner	Dale
i)	Enactive	Direct Experience
ii)	Iconic	Pictorial Experience

iii)	Symbolic	Abstract Experience
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Dale's cone of Experience (Superimposed with Bruner's concepts of enactive, iconic and symbolic learning)

Source: Instructional media and the new technologies of instruction by Heinich, Molenda and Russell (1982) p.12.

Use of the above classification should be applied with a note of caution, which is pointed out by Hackbarth (1996) below:

it seemed natural enough to begin instruction with concrete experiences and then by visual images, to progress to abstract symbols. However, the logic of such a progression broke down when it was realized that so called direct experience and visual images must be explained and interpreted by spoken and written words (p.7).

3.4 Additional Classification

For the purpose of design and production at this level, instructional media could be categorized as:

- i) Projected Visual or Audiovisual media such as slides, overhead transparencies and motion films.
- ii) Non-Projected Visual media such as still pictures, charts and those referred to by Heinich et al (2002) as media and materials.
- iii) Audio: recording of audio tape and audio discs
- iv) Computers: When they are incorporated for teaching and learning in concepts such as computer assisted learning and Internet browsing (Williams & Sawyers, 2005).

All of the above, except non-projected visual media need devices or equipment to operate them in instructional settings. Projected visuals, audiotapes, compact discs, overhead projection, videotapes and so forth are useful because they can be adapted to individualized, small, medium or large group instruction. However, there are problems associated with their use in Nigeria environment.

Some of the problems include:

- (a) Equipment/devices needed for utilizing them are expensive to procure. Those procured are usually not adequately maintained due to lack of spare parts.
- (b) Electricity supply is not satisfactory even where it is available. Many schools in urban centers do not have electricity in the classrooms while many schools in rural areas do not have electricity supply at all.
- (c) Audiovisual equipment are complex for teachers in our environment to operate because they have no adequate practical training.

- (d) There is high rate of breakdown because manufacturers of instructional equipment hardly take African climatic conditions into consideration.
- (e) Many software of instructional packages developed in Europe and America are not appropriate in African culture.

As a result of the above reasons, emphasis is placed on development of non-projected visual media for utilization in most parts of Nigeria. Indeed non-projected visuals have the following attributes, which recommend them for production by teachers in-service and student-teachers, especially in Nigeria:

- i) Most of the non-projected media are easier to develop or procure than media that need equipment for operation.
- ii) Many non-projected visuals can be found in the local environment or community.
- iii) Non-projected visuals could be utilized without need for electricity and as such, they are suitable for utilization either in rural or urban areas.
- iv) They are versatile because they can be adapted for use in any subject. For example, pictures or photographs could be used as flip charts; on magnetic boards and on flannel boards to teach subjects such as social studies, science, vocational studies and economics.
- v) Various categories of non-projected visuals can be combined to build up a lesson e.g. pictures; charts and models could be combined to teach a single lesson.

In spite of the advantages given above, non-projected visuals are usually not suitable for large group because the sizes could not be varied. Storage and retrieval constitute a problem especially when there is a large collection. If they are not carefully stored, pests and dampness may destroy them. Most non-projected visuals do not show motion.

Self Assessment Exercise

1. Describe: (a) audio media; (b) visual media; and (c) audiovisual media
2. Why do you think classifications of instructional media are essential?

4.0 Tutor-Marked Assignment

1. Identify three different concepts in your subject area which will require use of: (a) audio media (b) visual media and (c) audiovisual media.
2. Describe reasons why you have decided to select each of the instructional media group above.

5.0 Summary

Instructional Media (IM) are carrier of messages for the purpose of teaching and learning. IM are categorized in different ways and a user of them could apply the classifications according to this or her instructional needs.

6.0 Further Resources

- Bruner, J.S. (1966). *Towards a theory of instruction*. Cambridge, MA: Harvard University.
- Dale, E. (1969), *Audiovisual methods in teaching (3rd Ed.) handbook - A comprehensive guide*, Englewood Cliffs, NJ: Educational Technology Publications.
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- Singh, Y.K. & Sharma, T.K. Upadhya, B. (2008). *Educational technology: Management and Planning*. New Delhi: APH publishing corporation,
- Williams, B.K., & Sawyer, S.C. (2005). *Using information technology – A practical introduction to computers and communications*. New York: McGraw Hill Technology Education.

Unit 4: Integration and Selection of Instructional Media in Teaching and Learning

Content Outline

- Introduction
- Objectives
- Values of using Instructional Media in Teaching and Learning
- Selection on Instructional Media

1.0 Introduction

Hey there! Integrating instructional media into classroom teaching and learning can either positively or negatively disrupt the classroom process. To make sure that the integration is successful, it's important to have a good understanding of the value of instructional media. Welcome to Unit 4! The purpose of this unit is to help you understand the value of integrating instructional media in teaching and learning situations. You'll also learn how to select appropriate instructional media when presenting a lesson in your subject area.

2.0 Specific Objectives

At the end of this unit, you should be able to:

- 2.1 Indicate reasons why instructional media are required when presenting a lesson;
- 2.2 List and describe at least five values of using instructional media during lesson presentations;
- 2.3 List the major criteria which should be considered when selecting instructional media for lesson presentations; and
- 2.4 Apply Kemp and Smellie (1989) media selection charts when selecting for (a) individual student (b) small group of students and (c) large group of students.

3.0 Main Content

3.1 Values of Using Instructional Media in Teaching and Learning

In communication, there are various noise factors that hinder effective teaching and learning. The noise factors include boredom, referent confusion, misconception, daydreaming and so forth. If a teacher should give some thought into his teaching, he would be able to minimize or even eliminate some of these noise factors by making use of instructional media. There seems to be general agreement among media experts that proper use of instructional media enhances effective teaching and learning.

For example, McAnnany (1977) implied that there is a long tradition among media experts that the use of some technology will improve learning. He felt that media are adopted with beliefs that they:

- (a) Enhance the quality of learning;
- (b) Can provide students with education without lowering the quality of instruction; and
- (c) Promote efficiency in that teachers have to plan ahead when he intends to integrate media in his instruction design.

Dale, Hoban, Finn (1949) give advantages (as summarized by Heinich et al 1982) of utilizing audiovisual materials as:

- (a) They supply a concrete basis for conceptual thinking and hence reduce meaningless word responses of students
- (b) They have a high degree of interest for students
- (c) They supply necessary basis of developmental learning and hence make learning more permanent.
- (d) They offer a reality of experience, which stimulates 'self-activity' on the part of pupils.
- (e) They develop continuity of thought:- this especially is true of motion pictures.
- (f) They contribute to growth of meaning and hence vocabulary development.
- (g) They provide experience not easily secured by other materials and contribute to the efficiency, depth and variety of learning.

In addition to the above mentioned values, a summary of various views of authors (Hackbarth, 1996, Heinich et al, 2002, and Singh, Sharma, Upadhya, 2008) are provided below:

- (i) Use of instructional media can make quality instruction accessible to learners through use of educational radio, educational television and instructional recordings (videotapes, videodiscs and digital videotapes).
- (ii) Utilization of instructional media helps to create awareness for concepts to learn in form of advance organizers, statement of objectives and evaluation questions.
- (iii) When properly selected and utilized, instructional media can enrich instructional contents with the use of special effects such as time lapse photography, documentaries, musicals, computer simulations and virtual reality.
- (iv) Instructional media afford students the opportunity to carry out individualized and independent learning using simple media and

sophisticated ones such as computer-assisted learning and internet-based instruction.

- (v) They afford learners opportunities to engage in cooperative and collaborative learning. The use of hypermedia can, for example, stimulate students to rely on their cognitive strategies and enhance interchange of knowledge among colleagues.
- (vi) Teachers are relieved of some routine duties when media are introduced in teaching. For example, an entire course could be learned by a student using video or computer-based courses in technology and science. Use of instructional packages enables teachers to diagnose and correct learners' problems.

3.2 Selection of Instructional media

In order to use instructional media which are already available either within or outside the institution environment, there is need to consult educational technologists in some cases to assist you make appropriate selection, However, whenever you plan to integrate media in instruction, critical questions could assist you make wise selection. Some of the questions put forward by McAlpine and Weston (1994) and Fakomogbon (2000) include among others the following:

- (i) The content for the material should agree with the curriculum Authors generally agree that curriculum should determine content and materials rather than allowing available materials to determine curriculum (Wyman, 1976; Gana, 1981; Blythe-Lord, 1991). Gana (1981) is of the opinion that the choice of instructional media by some teachers has been guided by novelty of new devices without consideration for the demand of the subject matter,
- (ii) The material(s) selected should agree with grade or maturity level of learner. Most of the time, vocabulary used determines grade level. Some materials can be used with a wide range of students if the vocabulary is varied. If vocabulary used in a selected material is below or above that of a particular group, the teacher can use his or her own narration.
- (iii) Accuracy of information is another factor that needs careful consideration. Date of production should be checked to make sure that messages contained in a material are not outdated as a result of changes in ideas with passage of time.
- (iv) Main ideas of the media in relation to the lesson of topic should stand out and be clear to the target audience. A material cannot carry every detail of a lesson.
- (v) The material should be attractive. Good photography, graphics and sound will enhance the quality of any software.

(vi) The materials should promote additional activity rather than merely providing facts. They should spur students to activities such as library Study; conducting experiments and interviews, and so forth.

(vii) Is there any evidence of validation regarding effectiveness?

The above criteria are by no means exhaustive. It must be borne in mind that there is no instructional material which can serve every purpose. In support of this, Gana (1981) asserted that: "There is no single medium that can simultaneously manipulate all the sense organs in the learning environment" (p.24)

For this reason, it becomes necessary to consider the characteristics of each instructional material, its advantages and limitations. Having determined that might be of assistance to help make decisions about specific materials to serve one's purpose.

A practical approach for selection of instructional materials can begin with providing answers to these three general questions suggested by Kemp and Smellie (1989):

- [a] Which teaching/learning pattern presentation - individualized learning, or small group interaction is selected or is most appropriate for the objective and the nature of the student group?
- [b] Which category of learning experiences- direct realistic experiences, verbal or printed word abstractions, or vicarious, sensory experience- is most suitable for the objective and instructional activity in terms of the selected teaching/learning pattern?
- [c] If sensory experience is indicated or selected which attributes of media are necessary or desirable? (p.53)

A prospective user of material(s) will be helped to find solutions to the above questions after considering the characteristics of an instructional material and the target audience. Having answered these questions, a teacher could be helped further to make appropriate selection of media by consulting the charts in figures 1, 2 and 3 as presented by Kemp and Smellie (1989):

MEDIA SELECTION DIAGRAMS

Based on learning objectives and subject content, what attributes are required in the resources?

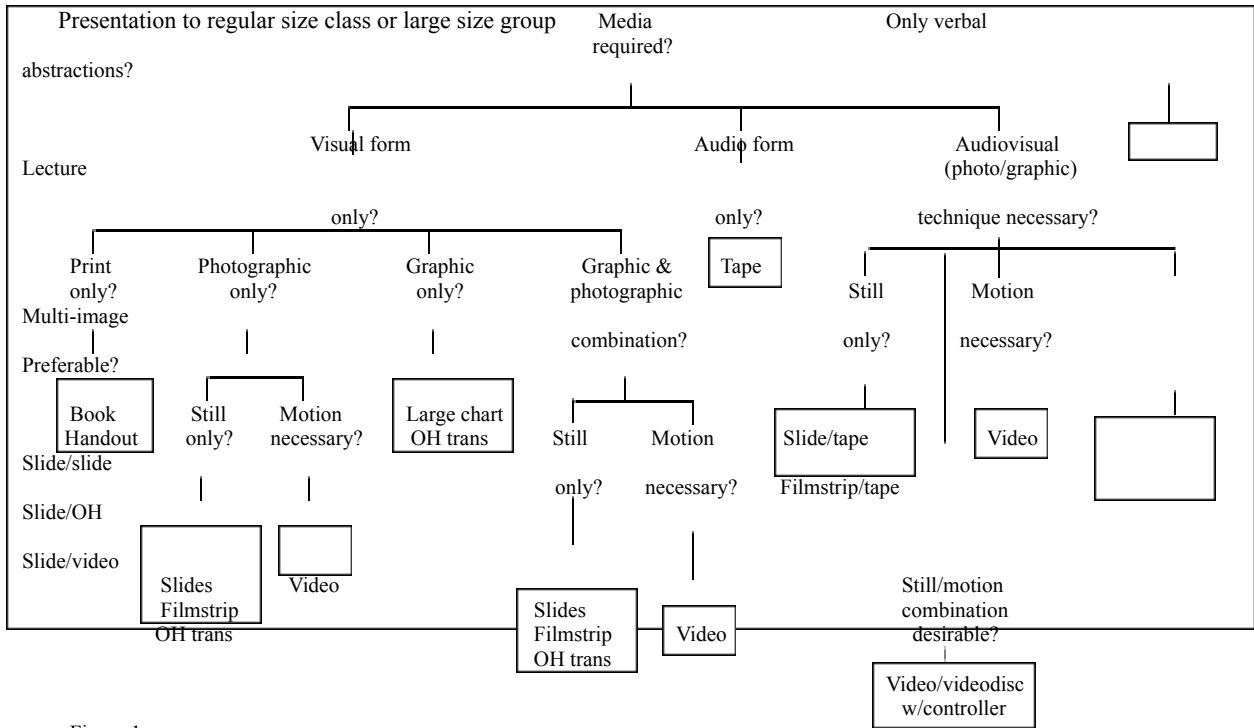


Figure 1

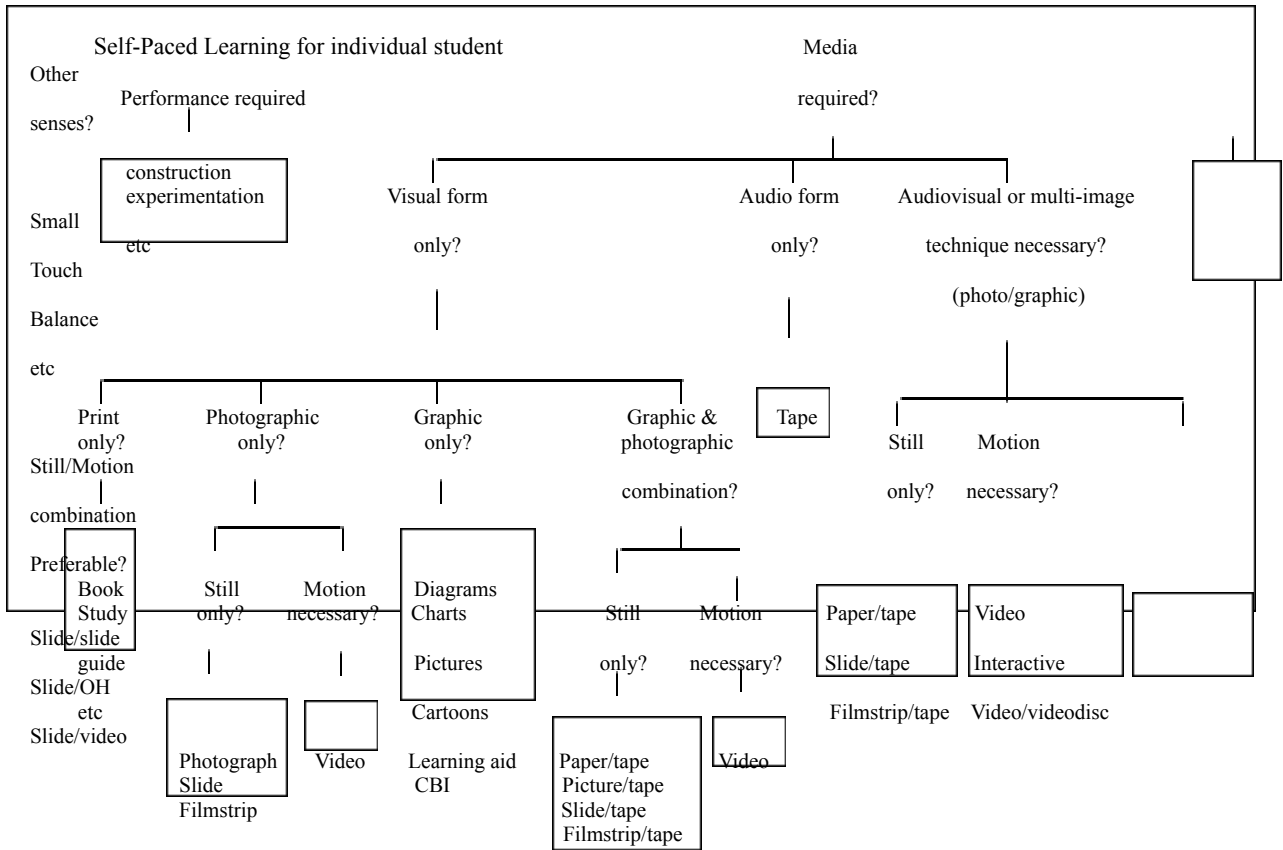


Figure 2

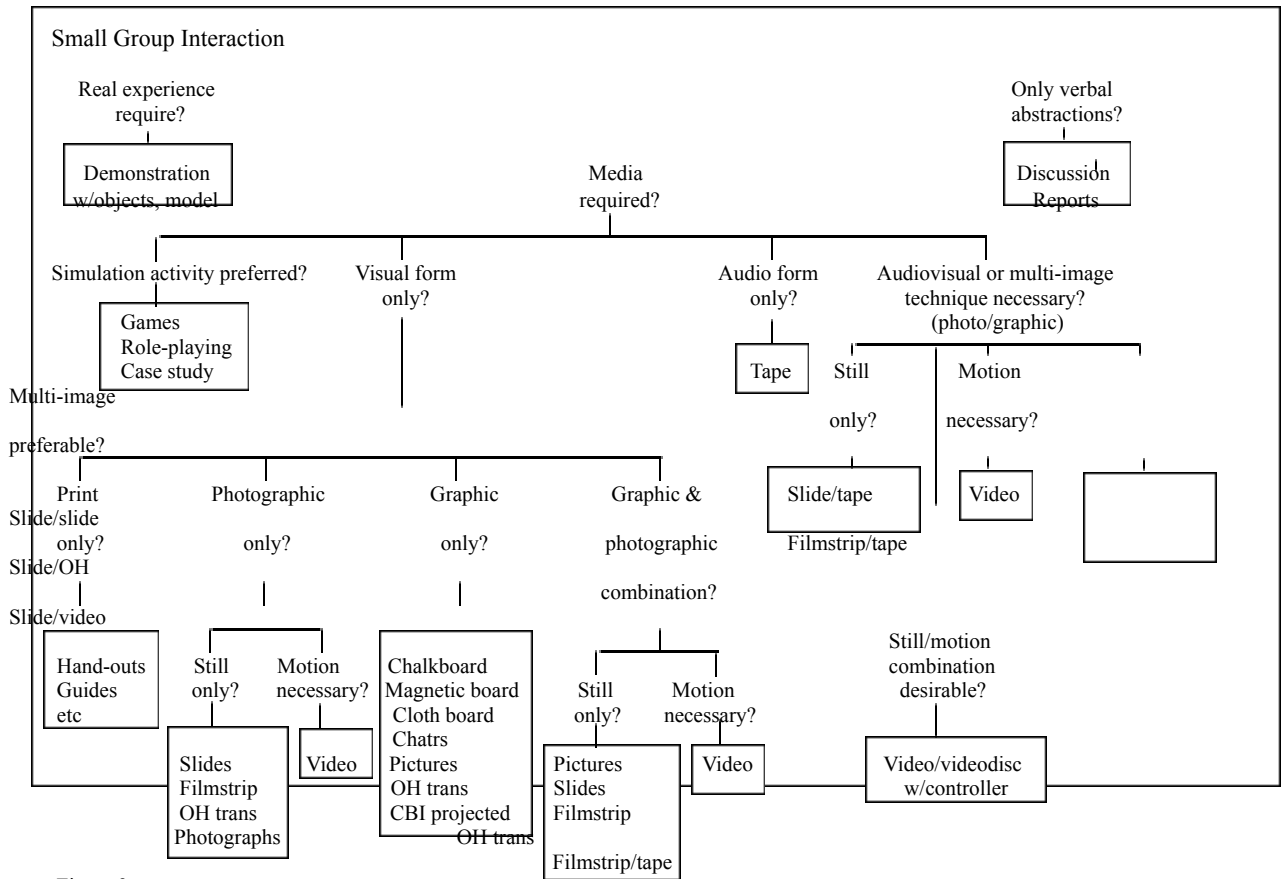


Figure 3

Self-Assessment Exercise

1. (i) Utilizing of instructional media can eliminate or reduce noise during lesson presentations. Yes () No ()
2. Use of instructional media could provide learners equal opportunity to learn
3. True () False ()
4. (iii) There is no need to use instructional media when a teacher is dealing with an individual student. Yes () No ()
5. With the use of instructional media in lesson presentations, a teacher has little to do with student in classroom or learning environment.
6. True () False ()
7. Enrichment of lesson content is possible when instructional media are used.
8. True () False ()
9. You need to select instructional media on the basis of:
 - a. newness (b) technologically driven (c) appropriateness to the curriculum content.

10. Which is not an up-to-date instructional media and therefore should not be selected:
11. A chart published in 1960 being used in 1995 on population of Nigeria
12. A historical map of 1914 political map of Nigeria for teaching amalgamation of North and South protectorate.
13. A political map with 21 state structure of Nigeria for teaching current status quo regarding Nigeria political structure
14. A book published in 1990 describing Boyles law.

4.0 Tutor-Marked Assignment

1. List five noise factors which could be overcome by using instructional media during a lesson presentation
2. List and describe five advantages for using instructional media specifically in your subject.
3. What consideration should you be concerned about when selecting instructional media for teaching?
4. Identify three topics in your subject and indicate with reasons the instructional media you will use to teach each of the topic with: (a) small audience, (b) large audience.

5.0 Summary

You ought to have known by now that:

There are values in using Instructional Media in teaching and learning. However, there is the need to make appropriate selection for teaching and learning.

6.0 Further Resources

Fakomogbon, M. A. (2000). *Selecting appropriate media and equipment for instructional*. In A. I. Idowu, S. O. Daramola, A. S. Olorundare, O. O. Obiyemi, N. Y. S. Ijaiya & K. Lafinhan (Eds.). *A guide to teaching practice*, Faculty of Education University of Ilorin.

Gana, F. Z. (1981). Effective educational media. *Nigerian Audiovisual Journal* (sept. 1981), pp. 24-27

Heinich, R., Molenda, M., & Russell, J.D. (1982). *Instructional media and the new technologies of instruction*. New York: John Wiley and Sons.

Heinich, R., Molenda, M., Russell, J.D. & Smaldino, S.E (2002). *Instructional media and technologies for learning (7th Ed.)*. Upper Saddle River: Merrill Prentice, Kemp, J.E. & Smellie, D. C. (1989). *Planning, Producing and using instructional media (6th ed.)*. New York: Harper & Row Publishers,

Hackbarth, S. (1996). *The educational technology handbook: A comprehensive guide: Process and products for learning*. New Jersey, Englewood Cliffs: Educational Technology Publications.

- McAlpine, L. & Weston, C. (1994). The attributes of instructional materials. *Performance improvement quarterly* 7(1), 19-30
- McAnnany, E.G (1977 Sept.) Why education technology? *Educational Broadcasting International*, (pp. 130 – 134).
- Singh, Y.K., Sharma, T.K. and Upadhya, B. (2008). *Educational technology: Management and planning*. New Delhi: APH publishing corporation.

Unit 5: Systematic Planning of the Use of Instructional Media for Teaching and Learning

Content Outline

- Introduction
- Objectives
- ASSURE Model
- Factors militating against effective use of Instructional Materials in Nigeria Higher Institutions

1.0 Introduction



Source: Yoruba Proverb: *Strategy Is Better Than...* (African Proverbs Page, 2016)

Did you know that there's a Yoruba adage that says "**ogbon ju agbara lo**". meaning "**strategy is better than strength**"? It's true! Strategy is achieved through systematic planning, and lack of planning is the only ingredient for failure. Unfortunately, there have been many reports of failed technology integration in classrooms. In most of these cases, planning has been the issue. That's why Heinich et al.'s (2002) model known as the 'ASSURE' model has been developed to help with this problem. Additionally, we'll discuss factors that are militating against effective use of instructional media in Nigeria's tertiary institutions.

2.0 Specific Objectives

At the end of this unit, you should be able to:

- 2.1 Use ASSURE model to integrate instructional media in your lessons;
- 2.2 List and explain conditions essential for utilization of media and material in lesson presentations; and
- 2.3 List and explain factors militating against use of instructional media in Nigeria tertiary institution.

3.0 Main Content

3.1 ASSURE Model

Planning is essential for lesson presentation. It is also important to carefully plan how instructional media will be integrated during lesson. Various models such as Kemp and Smellie (1989), Romiszowski (1992) and Heinich et al (2002), are provided for systematic planning of integrating instructional media in lesson presentation. In the case of Heinich, et al (2002), they provide a procedural guide for planning and conducting instruction that incorporates media and technology. This guide is referred to as "ASSURE" model. The model includes six steps as follows: Analyze learner; State objectives; Select methods, media and materials; Utilize media and materials; Require Learner Participation; Evaluate and Revise.

- A Learner should be analyzed on the basis of
 - i) General characteristics
 - ii) Specific entry competences
 - iii) Learning style

- S The objectives of the lessons are normally stated in specific terms. Use of vague verbs in stating objectives should be avoided.

- S Having identified the learner's characteristics, and objectives of the lesson, there is need to decide on methods of presentation, media formats that would be appropriate for integration with the methods selected. There are three sources to get instructional media-that is selection, modifying existing one(s) and developing new one(s).

- U The next step is utilizing the instructional media obtained by selection, modification or new design in implementing the method of teaching. There is need to preview and practice how the media will integrate well into the teaching methods.

- R The learner should be actively engaged by way of practice and feedback. Practice according to Heinich, et al (2002) "may involve students self-checks, computer assisted instruction, Internet activities or group games. Feedback may be provided by the teacher, a computer, other students, or self-evaluations". (P. 55)
- E The final step of ASSURE model is to evaluate the impact and effectiveness in terms of the instructional process, methods, media selected, and students' learning. If there is need for some amendments or corrections, revision of the entire plan should be made for subsequent presentations.

3.2 Conditions Essential for Utilization of Media and Material in Lesson Presentations

Various instructional media may be available for utilization during lesson presentation. However a teacher needs a lot of initiative to select appropriate media that would enhance effective teaching and learning.

Where instructional media is not available to teach a concept, a teacher would need to be creative or innovative in developing suitable or appropriate ones. Sometimes, all a teacher may need is to adapt or modify materials not even meant for classroom teaching. Integration of media in lesson presentations would enable teachers to involve students actively rather than engaging in one-way communication which often is found generally in Nigeria schools.

A useful guide in utilization of instructional media is provided by Smaldino, Russell, Heinich and Molenda (2005) as follows:

- (i) Preview the materials before use;
- (ii) Prepare the material with regard to the equipment needed;
- (iii) Prepare the environment where the instruction will take place – whether in a classroom, laboratory or football field;
- (iv) Prepare the learners by helping students to anticipate what are to be learned; and
- (v) Provide the learning experience that is the presentation of the lesson.

3.3 Factors militating against effective use of instructional materials in Nigerian higher institutions

Instructional materials are not widely used in Nigerian institutions due to certain constraints. Certain global constraints have been identified on media selection (Dick, Carey, & Carey, 2001, Reiser & Gagne 1983, Strauss & Frost, 1999). They identified the following three constraints:

1. (Un) availability of materials which create instructional materials, which usually leads to a production constraint.
2. Production Constraints: This emanates because creating quality instructional media can be a costly, in both time and money, enterprise. A central question to answer is what level of media quality is acceptable, that is, both time and cost efficient as well as instructionally effective.
3. Instructor Facilitation: To be able to use media successfully teachers must model, demonstrate, implement, or facilitate students learning. The amount or difficulty of this process of media facilitation may inhibit a teacher's ability to effectively utilize the particular media. In developing nations other constraints include:
 4. Lack of funds
 5. Low teachers' professional knowledge and technical know-how on media integration in instruction
 6. Time constraints:
 7. Poor maintenance culture
 8. Problem of electricity that hampers the use of electronic media

Self-Assessment Exercise

1. Based on your experience as a lecturer within the Nigerian school system, discuss how you can address the problems affecting the use of instructional materials in Nigerian schools.
2. When you intend to use instructional media in presentation, how will you
 - a. Prepare the environment (b) Prepare the learner? (c) Preview the materials?
3. Spell out 'ASSURE'
4. List five constraints which may hinder you when you intend to utilize instructional media for presentations.

4.0 Tutor-Marked Assignment

1. Choose a topic of interest to you. List and discuss the basic selection criteria you will use in selecting instructional media to teach the topic
2. Discuss how you can apply the ASSURE model to use media in your instruction.
3. Having considered several factors, how would you choose between two different instructional media that both seem appropriate in the achievement of instructional objectives?
4. List the major factors militating against your effective use of instructional media in your institution. Discuss how you have been addressing these problems.
5. Plan a lesson using any concept in your subject and indicate how you will integrate essential instructional media

6. List and explain five factors which hinder utilization of instructional media in Nigeria tertiary institutions.

5.0 Summary

By now you ought to be able to:

- (i). select appropriate instructional materials based on instructional objectives, learners' characteristics, learners and teachers' competence, media attributes (visuals, sound, motion, etc.), evidence of effectiveness, instructional fit, etc.

6.0 Further Resources

- Dick, W., Carey, L., & Carey, J. O. (2001). *The systematic design of instruction*. New York: Longman.
- Heinich, R., Molenda, M., Russell, J.D. & Smaldino, S.E (2002). *Instructional media and technologies for learning (7th Ed.)* Upper Saddle River: Merrill Prentice.
- Kemp, J.E. & Smellie, D. C. (1989). *Planning, Producing and using instructional media (6th Ed.)* New York: Harper & Row Publishers.
- Reiser, R. A. & Gagne, R. M. (1983). *Selecting media for instruction*. New York: Educational Technology Publication.
- Romiszowski¹, A.J. (1992). *The selection and use of instructional media*. London: Kogan pp.57-100
- Smaldino, S. E, Russell J. D., Heinich, R. and Molenda, M. (2005). *Instructional technology and media for learning (8th Ed.)* Columbus, Ohio: Pearson/Merrill Prentice-Hall.
- Strauss, J & Frost. R. D. (1999). *Instructional technology selection* (Web Page). Accessed 2003 Mar. Available at: <http://unr.edu/homepage/jstrauss/merpaper.html>

Unit 6: Audio and Audiovisual Media in Instruction

Content Outline

- Introduction
- Objectives
- Audio Media
- Audiovisual Media

1.0 Introduction

The focus of this unit is on the application of audio and audiovisual instructional media with regard to teaching. The audio and audiovisual instructional media could be in the form of recorded or broadcast messages. Furthermore, the advantages and limitations of audio and audiovisual instructional media are described in this unit. Follow this link for in-depth knowledge on this unit [AUDIO VISUAL MATERIALS - YouTube](#)

2.0 Specific Objectives

At the end of this unit, you should be able to:

- 2.1 Differentiate between (a) Audio recording and audio broadcast; and (b) Audiovisual recordings and audiovisual broadcasts;
- 2.2 Mention and describe: (a) audio formats (b) audiovisual formats;
- 2.3 Plan ahead to use audio/audiovisual broadcasts;
- 2.4 State advantages and limitations of audio/audiovisual broadcasts.

3.0 Main Content

3.1 Audio Media

Audio media are carriers of information which requires listeners to decode message with their ears. Audio media are useful for instructional purpose especially for teaching language – local or foreign. Formats of audio recordings mainly used for instruction are audio tapes and compact discs (CD's) (Smaldino et al 2005). In addition to audio recordings, public address system is valuable for use with large audience. Another audio format which may be incorporated in instruction is MP3 which allows audio files to be compressed and made small so that they can be sent over the internet. They can also be stored as digital files. A typical example of MP3 player is iPod.

Uses of audio recordings are advantageous because of the following reasons:

- (a) Audio players in whatever format are easy to operate and are inexpensive
- (b) Audio formats are abundantly available, portable and can be battery operated.
- (c) They are easy to duplicate.
- (d) Audio tapes, CDs and MP3 are useful for teaching languages, music, storytelling and adapted to use with blind students and students with deficits in reading skills.

Broadcast radio involves wireless transmission of audio messages over a long distance. Transmitter is required in order to send messages which are received using a radio set. A radio set may be designed to receive AM, FM or SW frequencies. Apart from radio sets, some cellular phones have been designed to receive radio broadcasts (William and Sawyer, 2010). Radio broadcast is a one-way audio presentation. As in broadcast television, it can be used in distance learning for direct teaching (e.g specific subjects in the syllabus) and providing enrichments aimed at supplying additional learning material. It is a one way lecture; however, interactivity could be added by using print materials to accompany programmes or provide phone-in service. Distance learners may be required to provide feedback to the lecturer by making available lecturer's phone number.

Radio broadcast is cheap form of delivering instruction in distance learning and it covers a wide range of population (Smaldino et al 2005). Radio broadcasts can convey effective instructional contents especially when it has to do with music, discussion, and story telling. It is also easy to use it for learning because the equipment for reception is easy to operate. However, radio broadcasts are limited in providing effective learning due to lack of visual presentation and fixed pace scheduling. It has no appeal for deaf and hearing impaired students.

In order to use educational broadcasts effectively and efficiently, it is suggested by Farrant (1980) among other things that:

- (a) Get advance details of programme for broadcast.
- (b) Plan to use live programmes or record them off-air for use at an appropriate time.
- (c) Make administrative preparation to obtain needed equipment for use of the broadcasts.

3.2 Audiovisual media

Video tape, videodisc and digital video disc are audio visual formats which allow viewers to "see" and "hear" at the same time. Contents of video formats are identical to images on television. Images on the format could be broadcast on television. The difference between the video formats and television broadcasts is that the learner has control over the former technology regarding where and when to view it with appropriate recorders. However, television broadcasts could be taped off-air.

Heinich, et al (2002) describe television "as the system of transmitting moving pictures and sound electronically, either through the air or through wires, and displaying the images on a cathode-ray tube (P.364). Television broadcasts are used in education to bring in audio-visual forms of experience outside the school environment to the classroom. Educational television is a one-way video and one-way audio which involves either pre-recorded or live programmes which are being broadcast to teach concepts.

Broadcast television can be used to present documentaries, dramas, public affairs, science and humanities programmes. Educational television can be used for direct teaching, presentation of core materials. They can also be used to provide enrichments.

Broadcast television can produce an impression in the audience that what is being presented is real because of motion. It can be used to:

- (a) Present drama by developing contents of a story or history;
- (b) Show dangerous situations such as bomb explosions nuclear reactor, and dangerous animals;
- (c) Concentrate attention on an item by zooming on a part of a machine or enlarging things such as bacteria which are too small to observe with naked eye;
- (d) Describe industrial activities such as manufacturing, theatre or development of a fetus from fertilization to birth.

Some of the limitations of television broadcasts include:

- (i) Presentation is in a fixed pace which may not take care of individual differences in learning.
- (ii) It is difficult to use television to present abstract ideas, for example, in philosophy and mathematics except contents are enriched with graphic illustrations or charts.

Self Assessment Exercise

1. Audio recording are basically the same as audio broadcasts
Yes/No
2. Audiovisual recordings could be adapted for television broadcasts
Yes/No
3. List three formats of audio recordings
4. Mention two types of broadcasts which can be used for instruction
5. What is a major advantage of television broadcasts over radio broadcasts?
6. Mention two instructional applications of audio recording or radio broadcasts.

4.0 Tutor Marked Assignment

1. Identify either an audio recording or audiovisual recording which you can use to teach a concept in your subject area.

2. Describe how you can integrate it into your lesson.
3. Try to acquaint yourself with 'LEARN' (ch.319) on Dstv. Identify a topic which you think you can incorporate into your lesson. How would you integrate it into your teaching?

5.0 Summary

By now you ought to be able to:

- (i) Mention that audio recordings are stored on tape, compact disc or MP3. You ought to have known that audiovisual recordings are available as videotape, videodisc and digital videodiscs;
- (ii) Identify that audio recordings and audiovisual recordings can be adapted for broadcasts and used for instruction. It should be noted that audio instructional media are advantageous for teaching language, history and social studies while audiovisual instructional media are useful for teaching concepts where movement are involved as for example, industrial set up;
- (iii) Be aware that you should plan ahead if you wish to use any broadcasts for instruction.

6.0 Further Resources

Heinich, R., Molenda, M., Russell, J.D. & Smaldino, S.E (2002). *Instructional media and technologies for learning (7th Ed.)*. Upper Saddle River: Merrill Prentice

Smaldino, S. E, Russell J. D., Heinich, R. and Molenda, M. (2005). *Instructional technology and media for learning (8th Ed.)*. Columbus, Ohio: Pearson/Merrill Prentice-Hall.

Williams B. K. and Sawyer, S. (2010). *Using information technology (8th Ed.)* New York: McGraw-Hill.

Unit 7: Application of Computer, Information and Communication Technology in Teaching and Learning

Content Outline

- Introduction
- Objectives
- Use of Computer in Instruction
- Meaning and Application of ICT

1.0 Introduction

This unit focused on the application of Computer, Information and Communication Technology in teaching as an aid to learning effectiveness. The use of Computer and other ICT tools has become pervasive in all aspects of life including teaching. Furthermore, in this unit, we are going to define Computer and its main applications in teaching using Computer Assisted Instruction (CAI) and Computer Managed Instruction (CMI). Other applications of computer in teaching and learning are also emphasized. Also, ICT is defined and its instructional applications are highlighted.

2.0 Specific Objectives

At the end of this unit, you should be able to:

- 2.1 Define Computer Assisted Instruction and Computer Managed Instruction;
- 2.2 Describe instructional application of CMI and CAI;
- 2.3 List other applications of computer in teaching;
- 2.4 Describe the concept of ICT;
- 2.5 Discuss its application in instruction;
- 2.6 Identify appropriate websites dealing with issues in your subject area.

3.0 Main Content

3.1 Use of Computer in Instruction

A computer is defined as a “Programmable Multiuse Machine that accepts data-raw facts and figures-and processes or manipulation into information we can use, such as summaries total or reports” (Williams & Sawyer, 2010, p.4). Computers have become useful in teaching and learning. They are also used for

administrative tasks and record keeping. In short, the two major applications of computer in instruction are computer assisted instruction/learning (CAI/CAL) and computer managed instruction (CMI).

In CAI, contents of a topic could be presented directly in a sequence in form of drill-and-practice, teaching of intellectual skill and initiation to creative skill and problem-solving. (Heinich, et al 2002). Computer can be adapted to present programmed instruction, tutorials, games and simulation for group and individual learners without need for teacher's presence.

Learning programmes have been developed which enable a student to assemble industrial products and engage in graphic design and colour separation.

In computer assisted learning, the computer may be programmed to ask a question and if a student answers correctly, he could proceed to the next question. If wrongly answered, he will be prompted with clues. This type of programming gives the student a one-on-one learning experience which caters for individual differences.

There is much need for computer managed instruction (CMI) because of the increasing emphasis being placed on individualized instruction. CMI could assist teachers and students to keep record on students and their activities. It could be employed to diagnose students' learning deficiencies and at the same time provide remediation.

Computer can also be employed by teachers and students in tertiary institutions for word processing with regards to executing assignments and project write-ups, multimedia projection, computation and retrieval of information. Entire books, encyclopedias and dictionaries are stored on CD-Rom or DVDs. The stored information can be read or searched. Interactive activities are made possible while reading texts by accompanying books with CDs or DVDs

In summary, computers can be integrated into curriculums using them for tutorial; gaming and simulation, problem-solving and graphical tools (CAD, Corel draw, Clip art and Instant artist). Another potential use of computer in institution has to do with its use with internet which will be discussed in the next module.

3.2 Meaning and Application of ICT

Information technology according to Williams and Sawyer (2010) is a "general term that describes any technology that helps to produce, manipulate, store communicate and/or disseminate information (p.4) Omiola (2011) regards ICT as micro electronics plus computing plus telecommunication. It involves personal computers, telephones and televisions which are connected through a network.

Williams and Sawyer (2010) report that information technology holds the promise of more interactive and individualized learning. For example, today's lecturers use "presentation graphics software such as power point to show their lecture outlines and other materials on classroom screen, they use blackboard, web CT and other course management software for administering online assignments, schedules examinations and grades" (P.5).

ICT has also become pervasive in instruction in tertiary institutions and distance learning. It makes it possible for students to go beyond classroom experiences and textbooks in learning content materials of a topic. It affords teachers and students opportunities to access information from various sources and subject experts and professionals. Typical sources on educational technology can be accessed on:

- (i) <http://www.itdc.k12.ca.us/curriculum/>
(Educational Media and Technology)
curriculum
- (ii) <http://www.stevens.edu/currichome.html>
(Center for Improved Engineering and Science Education)
- (iii) <http://www.prenhall.com/smaldino>
(Online Learning)
- (iv) <http://en.wikipedia.org/wiki/education> technology
(Educational Technology)
- (v) <http://www.umdj.edu/idsweb/idst5330/instructional> media.htm
(Instructional Media Selection and use)

With ICT, a teacher is no longer regarded as imparting knowledge, but guiding students to learning and improve performances. As a result of interactivity embedded in online learning, students and teachers can enrich their study.

Use of ICT is advantageous because up-to-date information could be got, variety of media such as audio, text video could be involved simultaneously. Caution should be taken when using ICT with regard to copyright concerns and lack of quality control on materials posted on the internet.

Self Assessment Exercise

1. Computer can be used to teach a concept directly to students
2. Yes () No ()
3. Computer application may not be relevant when teaching a core area within the curriculum.
4. Yes () No ()
5. In what area can CMI be of help to teachers and students?
6. Describe how CAI could be used in the classroom.
7. ICT can be used to teach concepts of a lesson.
8. Yes () No ()

9. Application of ICT can provide supplementary materials.
10. Yes () No ()
11. All information gathered through ICT are accurate.
12. Yes () No ()
13. ICT materials are limited to text and audio.
14. Yes () No ()
15. ICT hold the promise of more interactive and individualized learning.
16. Yes () No ()
17. List at least 3 ICT instructional applications.

4.0 Tutor-Marked Assignment

1. Computer can be integrated into the curriculum using it for:
2. Tutorial
3. Gaming and Simulation
4. Problem-Solving and
5. Graphical tools.
6. Look for one of the above application which is suitable to teach your subject and;
7. Describe the computer application you have chosen using appropriate illustrations.
8. Look for one talking book and explain its characteristics.
9. Locate and write out 5 websites dealing with issues concerning your subject area.
10. Download two instructional concepts which are related to your curriculum from one of the website you located in (i) above.

5.0 Summary

By now you ought to know that computers are used in teaching concepts directly (CAI) and administrative tasks and record keeping (CMI). In addition to the two major applications (CAI and CMI) of computer in teaching, interactive activities are made possible while reading texts by accompanying such texts with CD-Rom or DVDs. Additional use of computer in teaching include its application for tutorial, gaming and simulation, problem-solving and graphical tool.

You also ought to be aware that ICT holds promise for more interactive and individualized learning. Application of ICT makes it possible for students to go beyond classroom experiences and textbooks regarding learning of concepts. Students and teachers can enrich their learning with the use of ICT.

6.0 Further Resources

- Heinich, R., Molenda, M., Russell, J.D. & Smaldino, S.E (2002). *Instructional media and technologies for learning (7th Ed.)* Upper Saddle River: Merrill Prentice
- Omiola, S. (2011). *Design, development and validation of a web-based instructional package in Basic Technology for Nigerian Junior Secondary School Students*. A Ph.D thesis in the Department of Science Education, University of Ilorin.
- Roblyer, M. D. (2006). *Integrating educational technology into learning*. Upper Saddle River, New Jersey: Pearson/Merrill.
- Smaldino, S. E, Russell J. D., Heinich, R. and Molenda, M. (2005). *Instructional technology and media for learning (8th Ed.)* Columbus, Ohio: Pearson/Merrill Prentice-Hall.
- Williams B. K. and Sawyer, S. (2010). *Using information technology (8th Ed.)* New York: McGraw-Hill.

Unit 8: Design, Production and Assessment of Instructional Media

Content Outline

- Introduction
- Objectives
- Types of Productions

1.0 Introduction

There are some times when instructional media appropriate for use in teaching some concepts may not be available. In such an instance, self production by the teacher or students is allowed. Media Production involves three levels: creative;adaptive and imitative .

2.0 Specific Objectives

At the end of this unit, you should be able to:

- 2.1 Determine when there is a need for local production;
- 2.2 Mention and describe three levels of media production; and
- 2.3 Apply one of the levels of media production to create any relevant instructional medium.

3.0 Main Content

3.1 Types of Productions

A lecturer may wish to select an instructional material but may not find it in the school learning resource centre or in the institution's immediate environment. In such a situation there would be a need to produce new materials by the lecturer.

It should be borne in mind that such production involves three types: adaptive, creative invention and imitative (www.ijhumas.com>ojs>download)

Creative invention

Production at this level does not involve serious systematic planning, although more thought is given to it more than the mechanical level.

At this level a teacher might collect pictures from old calendars and organize them as an instructional flip-chart for teaching a concept. Another instance is whereby a lecturer wishes to visualize a concept (e.g types of marriage ceremonies). He could arrange to take photographs of traditional, Muslim and Christian weddings and use them to teach. Examples include videos or podcast , artistic works and a host of others.

Immitative production

This is adopting and using other materials or media that others have produced and used

Adaptive

This is an innovation which is added into media production. It deals with sequence of production in new form.

This level of production involves minimal planning on the part of the lecturer with regard to design and production. For example, a picture or illustration may be enlarged or photocopied for students' use. An overhead transparency or slide may be made from a picture or chart. A video or audio instruction may be taped off-air(www.coursehero.com>file>It-req)

It is the most sophisticated level of the three types of production of instructional media. Design involves a systematic approach which involves experts in various fields such as subject experts. Development of instructional media at this level requires a team of experts' effort. There are various models of instructional designs patterned after the generic one that is, ADDIE. Each letter of ADDIE is explained below:

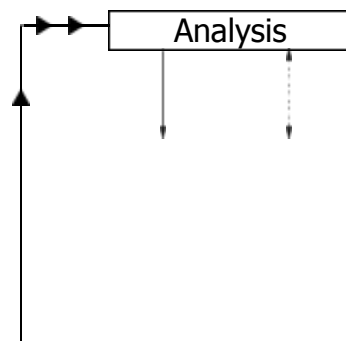
A – Analysis of learners/audience

D – Design (writing of objectives and specifying media)

D – Development (production of media)

I – Implementation deals with using the media to deliver lesson.

E – Evaluation – assessment and /or testing the developed material.



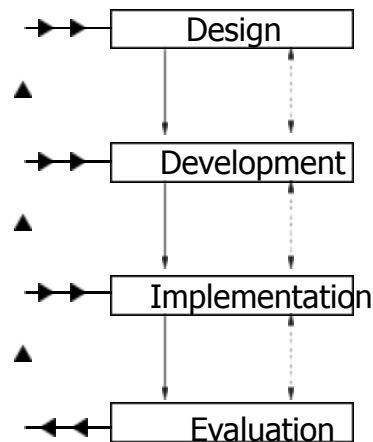


Figure 4.3: Major elements of the systems approach to ID, also known as “ the ADDIE model”

Source: Gagne, Wager, Golas, and Keller (2005)

Creating instructional media at this level requires that you consult with instructional design experts or educational technologists. A lecturer in tertiary institution can easily make available instructional media that are relevant . Lecturers need to learn some basic skills which include: design and organize illustrations for bulletin board, take pictures and production of a visual chart and organizing lecture content for power point presentation , using Learning Management System

Self Assessment Exercise

1. Describe two types of production
2. Select a chart in a textbook and enlarge it for a group of say 10 students. Use digital camera to capture the original and enlargement and send to the e-mail of your lecturer
3. Take a picture of a process in industry in a laboratory or in the society and send it to the e-mail address of your lecturer.
4. Make audio recording of instructional content of a short passage and send it to e-mail of your lecturer.

4.0 Summary

By now you ought to be able to determine when you need to make local production of instructional material. You should be able to describe three levels of production and apply either of the first two levels to produce instructional materials.

5.0 Further Resources

- Januszewski, A. & Molenda, M. (2008) *Educational technology – a definition with commentary*. New York: Lawrence Erlbaum.
- Kemp, J.E. & Smellie, D. C. (1989). *Planning, Producing and using instructional media (6th Ed.)* New York: Harper & Row Publishers.

Unit 9: Common Equipment Used for Instruction

Content Outline

- Introduction
- Objectives
- Basic Instructional Equipment

1.0 Introduction

The aim of this unit is to acquaint students with the need to identify essential instructional media and/or equipment. These equipment are usually needed to enlarge or magnify concepts being taught to a medium or large audience of learners. The instructional media can be integrated into any of the LMS or any other relevant links. The equipment can be in form of picture downloads or from any of the social media handles.

2.0 Specific Objectives

At the end of this unit, you should be able to:

- 2.1 state the importance of instructional equipment are used for teaching;
- 2.2 Identify basic instructional equipment; and
- 2.3 Describe the functions of each identified equipment.

3.0 Main Content

3.1 Basic Instructional Equipment

Two dimensional visuals such as flat pictures, drawings, charts and graphs are useful instructional materials. However, they may only be useful when teaching individual student or a small group of students. They are not suitable to use with either medium or large groups. Thus the need for relevant equipment for the utilisation of these two dimensional materials. The necessary equipment are as follow:

S/N	Equipment	Function
1.	Overhead Projector	Projection of still visuals on overhead Transparencies.
2.	Slide Projector	Projection of photographs or drawings on photographic slides.
3.	Opaque Projector	Projection of pictures/drawings directly from printed materials, coins, stamps and money.
S/N	EQUIPMENT	FUNCTION
4.	Document Camera	Projection of documents as for opaque Projection.
5.	Public Address System	Magnification of lecturer's voice giving instruction in a large audience.
6.	Multimedia Projector	Projection of texts, data and visuals.

In addition, the zoom, Google meet, whatsapp among others can also be suitable for a large number of students. students can be advised to download relevant video from Youtube, Digital classroom equipment, Telephoto, for immediate and future use. Before the new innovation in technology in education, video monitor was required for showing audiovisuals to individual or small group of viewers. However it was not suitable for large group viewing. Using video materials with a large group requires a video projector. Apart from using it to show audiovisual images, it can also be used to project computer data, texts, and graphics.

Self Assessment Exercise

1. Why do you need to use instructional equipment for a large audience?
2. Visit a nearby educational resource centre and identify equipment relevant to instruction.

5.0 Summary

By now you ought to:

- i. Be able to state reasons why instructional equipments are used in teaching and learning. You will also be able to identify basic equipment and describe their functions.

6.0 Further Resources

Heinich, R., Molenda, M., Russell, J.D. & Smaldino, S.E (2002). *Instructional media and technologies for learning (7th Ed.)* Upper Saddle River: Merrill Prentice.

Kemp, J.E. & Smellie, D. C. (1989). *Planning, Producing and using instructional media (6th Ed.)* New York: Harper & Row Publisher.

Unit 10: Operation of Instructional Media Equipment

Content Outline

- Introduction
- Objectives
- Operation of Basic Equipment

1.0 Introduction

Several instructional media equipment has been described in unit 9 of this module. You will need to physically examine the available equipment in a nearby resource centre and learn how to operate them.

2.0 Specific Objectives

At the end of this exercise you ought to:

- 2.1 Visit a resource centre and identify at least four instructional equipment for teaching a lesson;
- 2.2 Describe the operations of the equipment.

3.0 Main Content

3.1 Operation of Basic Equipment

Operation of media equipment described in unit 9 of this module requires some basic training from educational technologists/Educational resource specialists in state or local government educational Resource Centres (ERC), Institutionally based centres in a College of Education, Educational Technology Centres in Faculty of Education not far away from you. Consult with the experts there in order to identify the equipment and how to operate them. Medical Colleges also have media resource centres where equipment are utilised.

Before you go to the centres, read part 5 (classroom resources), sections B and C (pp.333 to 381) on equipment and setups; and how to ... step by step guides. [Smaldino, et al (2005),]

Self Assessment Exercise

1. Operate at least four of the equipment identified in unit 9.
2. Describe the steps you have taken from connecting the equipment to electricity to its use in instructional settings.
3. Take pictures (still or video) of how you have connected and operated two instructional equipment and send to the e-mail of your lecturer.
4. Explain the processes involved in (i) above.

4.0 Summary

You ought to be able to:

- (i) Connect at least four instructional equipment.
- (ii) Describe how each of the four (4) equipment could be operated.

6.0 Further Resources

Smaldino, S. E, Russell J. D., Heinich, R. and Molenda, M. (2005). *Instructional technology and media for learning (8th Ed.)* Columbus, Ohio: Pearson/Merrill Prentice-Hall.