

POSTGRADUATE DIPLOMA IN EDUCATION (PDE)

MODULE 2

MEDIA IN EDUCATION

UNIT 1: MEDIA IN EDUCATION

INTRODUCTION

Every instructional activity involves communication. As you study this unit, you receive information from me and respond to the information you receive. This exchanged made possible by the medium of print and the contents therein.

Educational media play a very important role in teaching and learning. The subject of this unit therefore is to explain what is meant by educational media and the reasons for using them.

OBJECTIVES

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

1. Define the term educational media
2. Describe at least eight reasons for using instructional media
3. Describe Dale's Cone of Experience and discuss its implication for use of media.
4. Describe the communication cycle and its application for instruction.

THE CONCEPT OF EDUCATIONAL MEDIA

Education cannot take place without one form of communication or the other. Communication involves the process of sending and receiving information or messages. For messages to get transmitted (sent or received) they must pass through a channel or medium or transmitter. Thus, media are channels through which messages, information, ideas and knowledge are conveyed and or disseminated. When such media are used for educational or instructional purposes, they are called educational media.

Medium (or media in plural) is used in general to mean a means of communication. It refers to anything that carries information between a source and a receiver. Instructional or educational media are means of communication used to carry messages with an instructional intent. Examples include printed materials, photographs, audio recordings, video recordings, radio, television, films, etc.

The classroom communication process was described in Module 1, Unit 4 of PDE 103. You may wish to refer to the unit once more to refresh your memory. The communication process may be illustrated with the diagram in fig. 2 below.

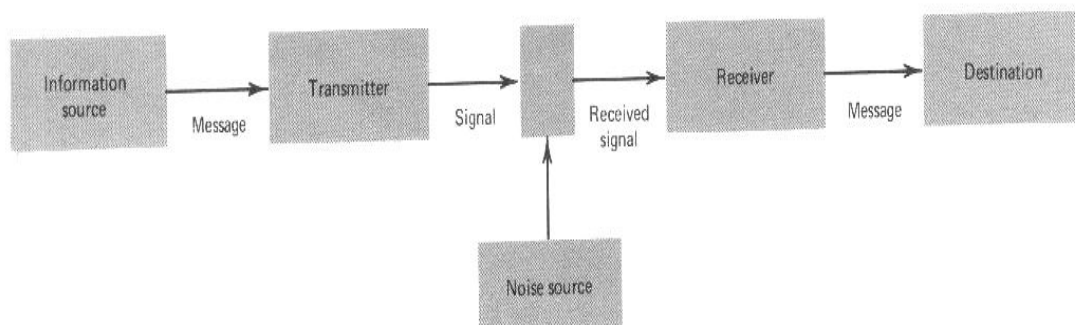


Fig. 2: *The communication process*

Source: Kemp, J..E. (1980) *Planning and producing audio visual materials*, New York, Harper & Row

In the previous unit, we discussed instructional objectives. Educational or instructional media help to facilitate the achievement of instructional objectives. We shall discuss this in more details shortly.

If you were a teacher in the 70s, you will be familiar with the term ‘teaching aids’. It took the place of ‘apparatus’ which was popular in the 60s. Today, we use the term ‘educational media’ or ‘instructional media’. What is the difference? Whereas ‘teaching aids’ are tools for the teacher to use in teaching, instructional or educational media can instruct on their own. Teaching aid connotes that it ‘aids’ the teacher in teaching. It is supplementary in the teaching-learning process; it is administered and controlled by the teacher and only does part of the job of instructional.

Today, most instructional media can teach on their own when properly programmed and when presented to students in an environment of enquiry conducive to learning. They are not supplementary to teaching but can bring about learning even in the absence of the human teacher physically present. They can present a complete body of information and can be largely self-supporting.

Adewoyin (1990: 70) sees the main distinction between the terms : ‘teaching aids’ and ‘instructional media’ as lying in orientation of each of the terms. While the concept of teaching aids is teacher-controlled, teacher-managed or teacher-centred, that of educational media is learner-centred.

There are various kinds of instructional media. Various authors have attempted to classify the different kinds of media.

It is necessary at this point for us to look into the values of educational media in general. Later we shall look at them one by one and describe the unique attributes, advantages and limitations.

ACTIVITY 1

1. What are educational media?
2. The term ‘teaching aids’ has been replaced by instructional media. Do you agree? Justify your answer.

WHY USE INSTRUCTIONAL MEDIA

As already explained, without communication there cannot be effective instruction and communication can only take place through media. Therefore, instructional media can play a very critical role in teaching and learning. We will now highlight some of the values, functions or role of instructional media.

1. **Instructional media provide concrete experiences** and enables students to integrate prior experiences with new learning. Psychologists like Jerome Bruner have proposed that learning is facilitated when instruction follows a sequence from actual experience through iconic representations (as in pictures, films, etc), to symbolic representation (as in words). Educational media can provide concrete experiences which facilitate learning and the acquisition, retention, and usability of abstract symbols. Through instructional media, the learner can visualize concepts that would otherwise have been abstract.

Instructional media provide the teacher or learner with various options to choose from. Edgar Dale, in 1946, developed what he referred to as the “Cone of Experience”. (See Fig 4).

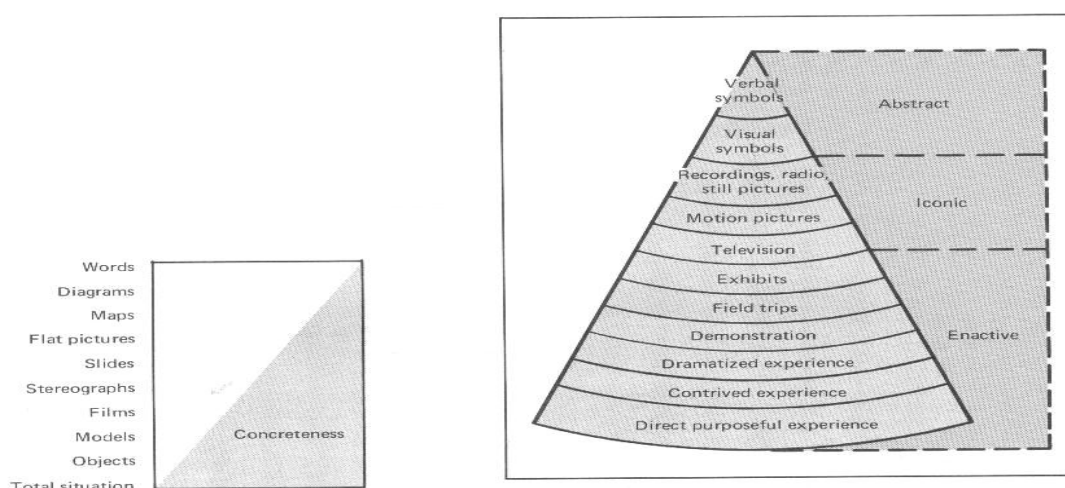


Fig. 4: Dale’s Cone of Experience

Source: Dale, Edgar (1969 : 108) *Audio-visual methods in teaching* New York, Holt, Rinehart and Winston

In the cone of experience, the learner can be made to move through various levels of experience. It is instructional media that can help facilitate this ‘movement’ from the bottom

level of direct, purposeful experiences to the peak of verbal symbols.

From Dale's Cone of Experience, we can deduce that:

- Concrete experiences facilitate learning and the acquisition, retention and usability of abstract symbols.
 - Instructional media provide the necessary experiences (whether direct or mediated, concrete or abstract) and help students integrate prior experiences with current.
 - Where direct concrete experience is not feasible or ideal, symbolic representations can be used.
2. **Instructional media help to support teacher-based instruction.** Educational media can serve as aid to teaching. As earlier pointed out, this had been the key reason for using educational media. Teachers use them to support their teaching. They use them to introduce the lesson, to highlight points, to generate attention, to elicit responses, to provoke curiosity and in many other ways. They use them as “advance organisers” which serve to prepare the learners mind towards receiving instruction. David Ausubel, an educational psychologist developed the concept of “advance organisers”.
 3. **Instructional media can facilitate students drill and practice.** For example, audio tapes can be used effectively for drill and practice in spelling, mathematics and language instruction . The computer is also well suited for drill and practice exercises. So also the language laboratory.
 4. **Instructional media can help promote the ‘discovery’ or ‘inquiry’ approach** to learning and teaching. Recorded video, for example, can be used to stimulate creative learning activities.
 5. **Instructional media can help take over some of the routine tasks of the teacher** thereby enabling him to have more time for other important tasks. Use of media enables the teacher to play the role of a facilitator or manager of learning rather than a dispenser of information. He can have more time to attend to individual students, diagnose and correct their problems and provide more stimulating learning environment. For example, the use of audio-visual or print materials, audio cassettes with task directions, practice work-books, computer, etc can help free the teacher from routine exercises.
 6. **Instructional media is particularly suited to individualized instruction.** It can provide learners with materials that are specially designed or chosen to suit their individual needs, interests, abilities and experiences. Almost any instructional medium (or combination of media) can be adapted for use in individualized instruction.
 7. Closely related to the point above is the use **of instructional media in special education.** Exceptional children can get special instructional treatments, even when in conventional schools. Thus, instructional media can help adjust instruction to different groups.
 8. Instructional media can **help learners to concentrate their attention,** time and effort

on a learning task.

9. Instructional media has taken instruction to non-formal settings outside the school. Learning and teaching now take place in homes, in business premises, in factories, in the market, every where and at any time. Instructional media has broken barriers to education, whether cultural, physical (distance), environmental, demographic, or economic. It is therefore no wonder that distance education has relied heavily on instructional media. The trend is that with the pervasiveness of information and communication technology, all forms of education will increasingly become more media-driven.

It is important to differentiate between software and hardware. Software are the learning and teaching materials that carry information or the instructional content. They are the consumables or the disposables which wear and tear as they are used.

Hardware are the equipment or devices which are used for presenting materials. They include machines, equipment, tools or gadgets with which the software will be transmitted.

The table below shows examples of hardware and the software that accompany each of them. You can see fig. 3 for the classification

SOFTWARE	HARDWARE
16mm films	16mm projector
8mm films	8m projector
Filmstrips	Filmstrip projector
Slides	Slide projector
Transparencies	Overhead projector
Opaque materials e.g. magazine, picture or printed page	Opaque projector
Photographic films	Cameras
Audio tapes	Tape recorders
Video tapes	Video recorder
Floppy discs	Computer
CDs, etc	
Microfilm	Microfilm reader
Wall sheets, charts, graphics, etc	Display board

We have continued to say that instructional media “can” play the roles above. The use of the word “can” shows that instructional media have these potentials but these potentials may not be realized. That is why it is necessary to adopt the systems approach in the use of instructional media. In the next section, we will examine the ASSURE model. It gives a systematic plan for the use of media.

ACTIVITY 2

1. List and discuss five reasons for using instructional media in teaching/learning.
2. Describe Dale's cone of experience. What implication does it have for instruction?
3. "Educational media is very important in classroom communication." Explain.

SUMMARY

- Educational or instructional media are means of communication used to carry information or message that facilitate the achievement of instructional objectives.
- Instructional media play a very important role in teaching and learning.
- Dale's Cone of Experience shows that there are various levels of learning experiences ranging from the concrete to the abstract and that instructional media can help to transmit such experiences.

REFERENCE

- Adewoyin, J. A. (1991). **Introduction to educational technology**. Lagos: Johns-Lad Publishers.
- Agun, I & Imogie I. (eds) (1988). **Fundamentals of educational technology**. Ibadan: Y-Books
- Heinich, R., Molenda M. & Russel, J. D. (1982). **Instructional media and the new technologies of instruction**. New York: John Wiley and Sons
- Imogie, A, I. (2002). **Improving teaching and learning: An introduction to instructional chnology**. Benin: Joe Seg Assoc.
- Onuebunwa, S. E. (1999). **Educational technology: An introduction**. Owerri: Cape Publishers.

UNIT 2: SYSTEMATIC PLANNING FOR THE USE OF MEDIA

INTRODUCTION

Before looking at the peculiar attributes, advantages, and disadvantages of individual media in education, it is necessary for us to know the guiding principles and theoretical rationale for deciding on what materials and methods to use.

Various instructional models have been proposed by various authors and experts. In this section we shall examine the ASSURE model developed by Heinich R., Molenda M. and Russel James D. (1985 : 33) in their book *Instructional Media and the New Technologies of Instruction*.

OBJECTIVES

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

1. list the three assumptions made by proponents of the ASSURE model;
2. list and describe the six steps in the ASSURE model for the use of media;
3. list two general and two specific learner characteristics that could affect the selection of media;
4. state instructional objectives following the ABCD format;
5. describe the procedure for selecting, modifying and designing materials;
6. list and describe procedure for utilizing materials;
7. describe how learner response can be elicited during and after using media; and
8. justify the statement that “evaluation is used as the starting point of the next and continuing cycle of the ASSURE model”.

THE ASSURE MODEL

The ASSURE model gives six steps or procedures in the systematic planning for the use of media. As already explained, no effective instruction can take place without careful planning. This is particularly true of the use of instructional media. For us to get the maximum benefits out of the use of media, we must systematically plan for it.

The authors of the ASSURE model believe that if their procedures are followed, it will ‘assure’ that media become effective in instruction. However, the proponents start by specifying some assumptions:

1. that a particular audience has been identified (e.g. the class to teach is known).
2. that training or instruction is what is required i.e. it is lack of knowledge that is the cause of the problem to be tackled.

3. that the content of instruction has been competently analysed in terms of its scope, sequence and accuracy (e.g. there is a curriculum guide to be followed).

ASSURE is an acronym for:

A	=	Analyze Learner Characteristics
S	=	State Objectives
S	=	Select, Modify or Design materials
U	=	Utilize Materials
R	=	Require Learner Response
E	=	Evaluate

We will now take them step by step and describe what is required or procedure to take.

Analyse Learner Characteristics

The first step in planning to use media is to identify the learners. You cannot select the best medium to achieve the objectives if you do not know your students. You need to know two types of traits:

- (a) general characteristics not directly related to the lesson content such as age, gender or class, job/position, intellectual aptitude, and cultural or socioeconomic factors. These factors will help you to determine the level of the lesson and the kind of examples that will be meaningful to the learners.
- (b) specific entry competencies (those knowledge, skills and attitude) that the learners already possess that is relevant to the topic or lesson. Relevant questions here are: what prerequisite skills do the learners possess? What is the attitude of the learners to the subject? Have learners already mastered some aspects of what you intend to teach? Answers to these questions will suggest the next step to take.

Various means can be used in gathering data about your target audience. We could use informal (or even direct) questioning of and conversation with learners and group leaders. We could examine academic and other records. Various kinds of tests can be administered. We could use standardized tests or teacher-made tests. Entry testing can help determine whether or not the learners possess the prerequisite skills. Protests could be administered before instruction in order to find out if the learners have already mastered what you intend to teach so that you don't waste your time.

A study of the characteristics and capabilities of your audience will enable you to match your media and instructional methods to these characteristics and capabilities.

State Objectives

The next step is to state the objectives of instruction. You have to be as specific as possible. As discussed in Unit 3 your instructional objectives should follow the ABCD format. They should state the audience, the behaviour, the condition and the degree.

The objectives may be derived from a needs assessment, a course syllabus or lifted from a

text book. It could be taken from a curriculum guide or developed by the instructor.

Well stated objectives will enable you to make the correct selection of media and methods. Knowing your objectives will enable you create a learning environment in which the objectives can be achieved.

ACTIVITY 1

1. Describe the six steps (or procedures) in the systematic planning for the use of media using the ASSURE model.
2. What assumptions should the user of the ASSURE model bear in mind?
3. List two general and two specific learner characteristics which could affect media selection.
4. Explain why the clear statement can assist in the selection of media for instruction.

SELECT, MODIFY OR DESIGN MATERIALS

By identifying the present knowledge, skills and attitudes of your audience you have laid the foundation. Clearly stated objectives point to where you intend to go. The next task is to build on the foundation in order to reach your target. Just as there must be a match between learner and objectives, there also must be a match between learner and materials.

Thus, the next step is to obtain appropriate materials that will allow your students meet the instructional objectives. There are three options:

- (a) selecting available materials,
- (b) modifying existing materials, and
- (c) designing new materials.

If materials that will allow your students meet the objective are available, then use them. It saves time and money. When the media and materials available do not match your objectives or are unsuitable for the audience, it is advisable to modify them. If modification is not feasible, the final alternative is to design your own materials.

Selecting Available Materials

The pervasive presence of instructional media especially the increasing access to the internet and other sources entails that careful selection must be made.

In selecting materials for instruction, you are advised to consider the following:

- (a) the characteristics of the learners e.g. vocabulary, reading or listening level, possession of prerequisite skills, etc.
- (b) the nature of the objectives - will the material help you and your students to attain your objectives?
- (c) the instructional approach, and

- (d) the constraints of the instructional situation. You may need to ask: is the time, money, equipment, personnel or facilities that will be needed for the use of the media available?

Various media appraisal checklists that suggest the detailed criteria to look for have been designed generally for media and specifically for each of the specific classes of media. Such checklists can serve as useful guide. It is also recommended that the instructor or teacher should keep a personal file describing the instructional strengths and weaknesses of available media.

Modifying Available Materials

You are advised to modify available media if found unsuitable. This may be the preferred option instead of designing from scratch. It could however be tasking. A picture or diagram that contains too much of details and complex terminology could be modified to contain less details. Some materials can be modified to reflect the local culture or situation. You can pick just the portion(s) that you need from a film, a video, audio tape, filmstrip, slides, textbook, etc. With sophisticated editing machines now available, it is possible to modify videos and audio tapes. Even instructional games can be modified to suit your situation.

It is however necessary to caution that copyright laws and restrictions must be respected in your handling and use of such materials.

Designing New Materials

When it becomes absolutely necessary for you to design own materials, you will need to consider the following factors:

- (a) the **objectives** to be achieved.
- (b) the characteristics of your **audience**.
- (c) the **cost** of supplies needed to prepare the materials.
- (d) the necessary **technical expertise** needed to design and produce the material.
- (e) the necessary **equipment** to produce and/or use the materials you intend to design.
- (f) the **facilities** needed to prepare and/or use the materials.
- (g) the **time** necessary to design and produce the material you intend to produce.

UTILIZE MATERIALS

The next step in the ASSURE model is to plan how the materials will be used and how much time will be spent using them. It is suggested that the following utilization procedures be followed:

- (a) preview the material
- (b) practice the presentation
- (c) prepare the environment

- (d) prepare the audience, and
- (e) present the material
- (f) follow up

(a) Preview the Material

This entails going through the materials yourself to ensure that it actually meets your need. You are to also note some of the points you will need to highlight during presentation.

(b) Practice the Presentation

It is advisable that you practice your portion of the presentation at least once well in advance. Microteaching techniques can be very useful here. It is possible to practice before a mirror, a colleague or friend, an audio tape recorder, or a video tape recorder.

(c) Prepare the Environment

It is necessary to prepare in advance the wherever the presentation will take place. This may be classroom, seminar room, auditorium, etc. The facilities will have to be put in order and tested. Things to consider may include: seating arrangement, ventilation, lighting, power supply, access to light switches, condition of the facilities, room darkening, etc.

(d) Prepare the Audience

Adequate preparation of the learners for a presentation can determine effective instruction. As already noted, Ausubel highlighted the importance of “advance organisers” in instruction. This can be inform of a broad overview of the lesson or an introduction to lesson content, relating the presentation to the topic being studied, making the learner appreciate what he will gain from the presentation, and directing attention to specific aspects of the presentation. We could in form the viewers of the specific objectives. It may be necessary to identify and explain difficult and unfamiliar terms and vocabulary.

(e) Present the Material

Capture and sustain the interest and attention of the audience. Be natural and avoid distracting mannerisms. Position yourself well. Create a relaxed environment.

(f) Follow Up

Follow up with class discussion, small group activities, or individual projects and reports.

ACTIVITY 2

1. When should the teacher select, modify or design materials for instruction?
2. Describe the basic procedure for selecting, modifying and designing materials.
3. When should you design your own materials? Explain any five factors that you will consider.
4. Describe the six steps in utilizing instructional materials.

REQUIRE LEARNER RESPONSE

Learning theorists have emphasized the importance of participation in learning as well as constant reinforcement of desired behaviours. It has long been realized that creating opportunity for learner participation and learner response enhances learning.

Learning becomes most effective when you allow the learner to engage several senses (hearing, sight, touch, smell, taste) in learning. Learning by doing is known to be very effective. Materials need to be designed to include overt and covert responses such as vocalizing, writing out words, taking notes, manipulating materials, answering questions, short quizzes.

It is necessary to give feedback by confirming or correcting responses made. Immediate feedback is particularly important when working with slow learners.

In short, there should be activities within the lesson that allow learners to respond and to receive feedback on the correctness of their responses.

Computers are well suited for providing opportunity for learner response and reinforcement

EVALUATE

The final step in the ASSURE model for effective learning is evaluation. After instruction, we need to find out if the learning objectives set at the beginning have been achieved, whether or not the media and methods were effective and if the teacher had been effective.

Evaluation takes place before, during and after instruction. We had earlier noted the need for entry testing, pre-testing and other data gathering methods in order to know the learners to be instructed. Also, in selecting materials, a number of criteria had to be used in judging what materials to use. During instruction various forms of questioning, checking, reinforcement of positive responses, etc go on. After the completion of instruction, a comprehensive evaluation of learner achievement, effectiveness of the media and methods and even the teacher must be done.

Various methods are used in evaluation depending on the objectives. Apart from the conventional paper-and-pencil tests, we can use oral questioning, interviews, observation checklists, anecdotal records, project, inspection of products, performance checklists, or a rating scale.

Evaluation is both the end and beginning of instruction. At the end of instruction, there is

evaluation. The feedback from evaluation is used as the starting point of the next and continuing cycle of the ASSURE model.

ACTIVITY 3

1. Why is learner response necessary when using media?.
2. What effect does feedback and reinforcement have on learner response?
3. Discuss the role of evaluation in the use of media.
4. Write short notes on: (a) the techniques for evaluating learner achievement (b) the techniques for evaluating media and methods.

SUMMARY

- For instruction to be effective, it must be carefully planned. To get maximum benefits out of the use of instructional media, we must systematically plan for it.
- To ensure that media become effective in instruction, some authors have proposed the ASSURE Model which is an acronym for:

A = Analyze learner characteristics

S = State objectives

S = Select, modify or design materials

U = Utilize materials

R = Require learner response

E = Evaluate

REFERENCES

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

UNIT 3: INSTRUCTIONAL MEDIA

INTRODUCTION

In this unit, we will discuss the instructional media that are non-projected nor electronic. These are materials that do not require projection for viewing. They are not electronic. You must be very familiar with printed materials, pictures, diagrams, charts, posters, models, real things, the chalkboard and other display boards. They are so common and easily obtainable. A teacher worth his salt must not only know about their strengths and weaknesses, but also how best to use them.

In this unit, we will study the unique advantages and limitations of each of these visuals and how they can be used for instruction.

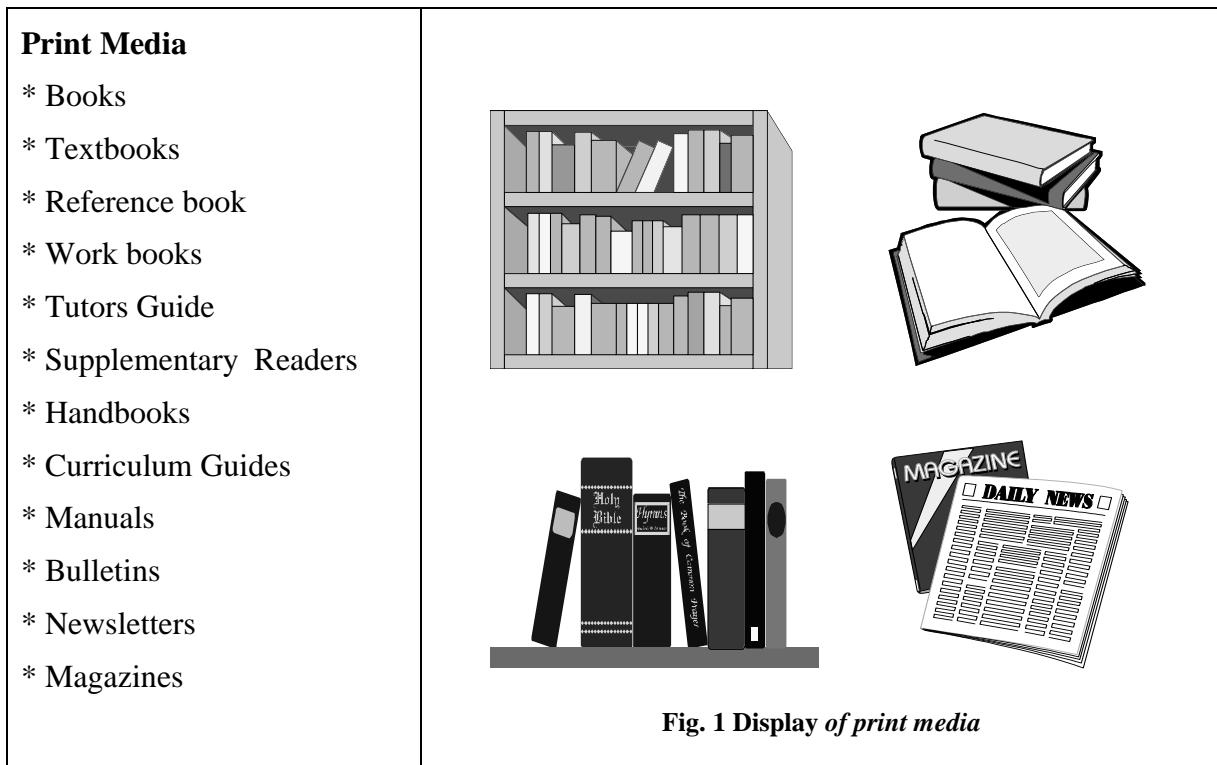
OBJECTIVES

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

1. list the attributes (advantages and/or limitations) of print materials.
2. explain the reason for combining the print media with other media.
3. define non-projected visuals and identify three main classes.
4. list five advantages and three limitations of still pictures and four uses of still pictures for instruction.
5. define graphic materials and describe five types of graphics.
6. distinguish between models and realia and identify three advantages and three limitations of models as instructional model.
7. describe six formats for displaying visuals in the classroom.
8. give five tips for using the chalkboard and five tips for using flip charts.

PRINT MEDIA

Printed materials include textbooks, reference books, readers, workbooks, handbooks, tutors' guides, journals, magazines, periodicals, newspapers, letters, booklets, posters, bulletins, handouts and handbills, etc.



Advantages

The printed materials have the following advantages:

- (a) Print is very familiar to learners and teachers and can be designed in an attractive manner.
- (b) It is relatively cheap to buy and relatively low-cost to produce.
- (c) Print is easy to use as it does not require any special technology. Learners have a high degree of control over the way they use it as they can use it when, where and how they choose.
- (d) Print can be used to teach most subjects effectively. It uses words, numbers, illustrations, graphics, photographs, diagrams and sketches which aid learning.
- (e) Print is durable and relatively easy to store.
- (f) Print materials can be written for classroom use, for independent study and reference purposes.

Limitations

- (a) Print requires learners to be literate (able to read and write). Learners who are not part of a 'reading culture' may be disadvantaged.
- (b) Print may not be able to teach some subjects effectively especially those that require sound or movement e.g. listening skills in language, appreciation and performance in

music, dance and drama; and topics in science and technology and physical education.

- (c) Print is essentially a one-way medium. There are limited opportunities for dialogue and interaction. It has to be integrated with other media to be able to make it truly interactive.
- (d) Working with print can be very demanding, impersonal, tiring and tedious.
- (e) Print can also be outdated unless revised at reasonable intervals.

To solve these problems, print is often integrated with other media such as the electronic media - audio and video cassettes, radio, television, CDs, the Internet and WWW.

ACTIVITY 1

1. List any ten printed materials used for teaching and learning.
2. Describe any five attributes of the print media including five advantages and five limitations.
3. How can the limitations of print materials be overcome?

NON-PROJECTED VISUALS

These are visuals that do not require projection for viewing. They are readily available and are used more extensively in the classroom. This is particularly true of developing countries where lack of electricity, poor funding, lack of know how limits the use of projected and electronic media.

We will discuss non-projected visuals under three classes: still pictures, graphics and models and realia.

Still Pictures

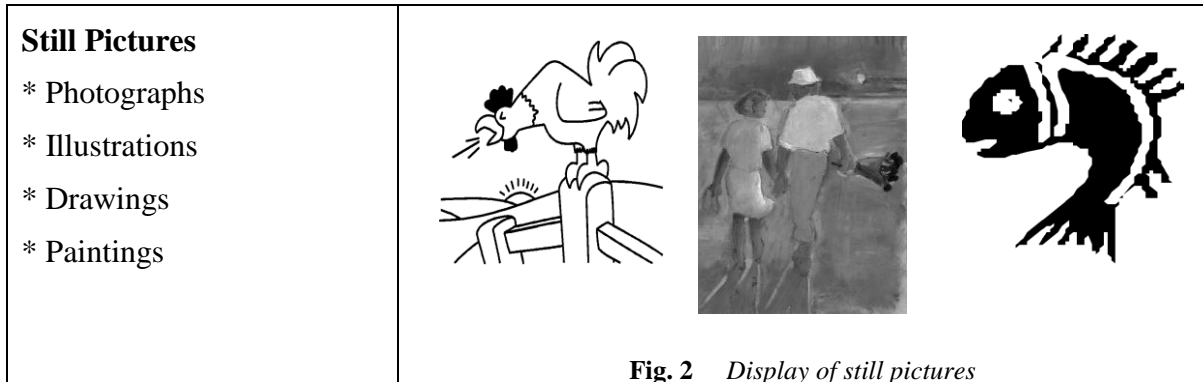
Still pictures are photograph-like representations of people, places and things. They include photographs, illustrations (in books, magazines, newspapers), drawings and paintings.

Advantages

- (a) Still pictures are readily available in books, magazines, newspapers, calendars, and from shops. A teacher can easily identify them and use in classroom instruction.
- (b) They are easy to use since they do not require any special technology.
- (c) They are relatively cheap and some can be obtained free.
- (d) They can be used in many ways at all levels of instruction.
- (e) They help to 'concretize' abstract ideas.
- (f) They are easy to produce by drawing, photocopying, enlargement, cut out and mounted or placed in an album.

Limitations

- (a) Some of the pictures in text books, magazines and newspapers are too small for use before a group or large class. They need to be enlarged and this can be expensive. The opaque projector can be used to project an enlarged image.
- (b) As 2-dimensional materials, still pictures may not be used to explain certain concepts especially where depth is involved. Series of pictures showing different positions may be needed.
- (c) Still pictures do not convey motion.



Applications

Still pictures can be used in a variety of ways:

- (a) To illustrate the lesson.
- (b) To record information e.g. photographs taken during field trips.
- (c) To understand the write-up in textbooks, newspapers and periodicals.
- (d) To test and evaluate what has been learnt
- (e) To stimulate creative work such as telling, writing or composing stories, poems, and other writings or oral work.

Tips

It is important for you as a teacher to draw your students attention to relevant photographs and require them to use the illustrations in their study. Large pictures are to be preferred to small pictures when dealing with a group or the class. Limit the number of pictures to be used. Use one picture at a time and keep away the ones already used to avoid distraction. Ask direct questions from the picture in order to keep your students' attention. Write important information contained in the pictures or questions as captions for the pictures if they are to be displayed.

Graphic Materials

A second major category of non-projected visuals is graphic materials or simply graphics. Graphics are non-photographic, two-dimensional materials that communicate information or ideas using some combination of drawing, words, symbols and pictures. Graphic messages are brief, well focused and visually symbolic rather than fully representational. Graphic materials are of various kinds namely: drawings (including sketches and diagrams), charts, graphs, posters, cartoons and comics

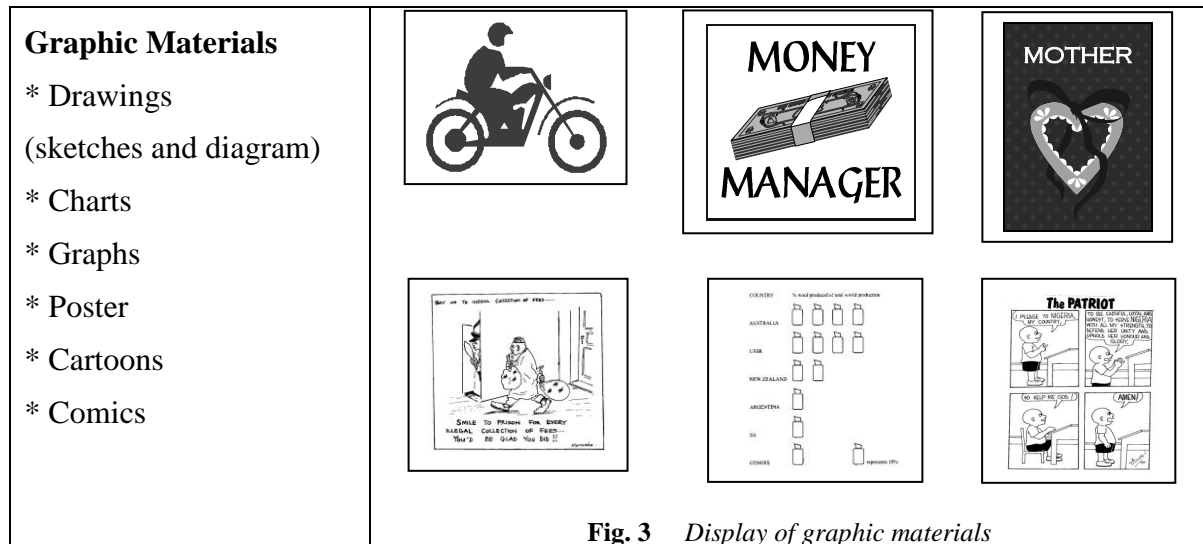


Fig. 3 Display of graphic materials

Drawings

Drawings, sketches, and diagrams use lines and symbols to represent persons, place, things and concepts. They show relationships or help to explain processes such as how a thing works or how it is constructed.

Drawings are less detailed than still pictures and are often more easily understood by learners of all ages. Drawings can be used in all phases of instruction. Indeed, it is necessary for the teacher to illustrate his lesson with drawings from the beginning to the ending. Drawings form a useful companion of the teacher. They frequently appear in textbooks and other classroom materials.

Charts

A chart is a combination of pictorial, graphic, numerical or verbal materials. It gives a clear visual summary of a vital process, concept or relationships. It is important to keep your chart simple. It should have a clear, well-defined instructional purpose. It is better to have a series of simple charts than a single complex one.

Charts help to present visually ideas or concepts which are likely to be difficult if presented orally or in written form. They are useful in highlighting the important points of any presentation. Charts can readily be found in textbooks and other classroom materials. They are also available commercially and can be readily produced by the teacher from card boards

of various colours and sizes. Charts are probably the most useful type of instructional materials available to the teacher. They are regarded as the backbone of the visual materials available to the teacher. There are various kinds of charts including:

Types of Charts

Organization charts (or Organogram) which show the relationship or “chain of command” in an organization. They illustrate the structure of an organization, an institution, a company, or government department. The organogram illustrates the flow of authority in an organization from the head down the line to the bottom.

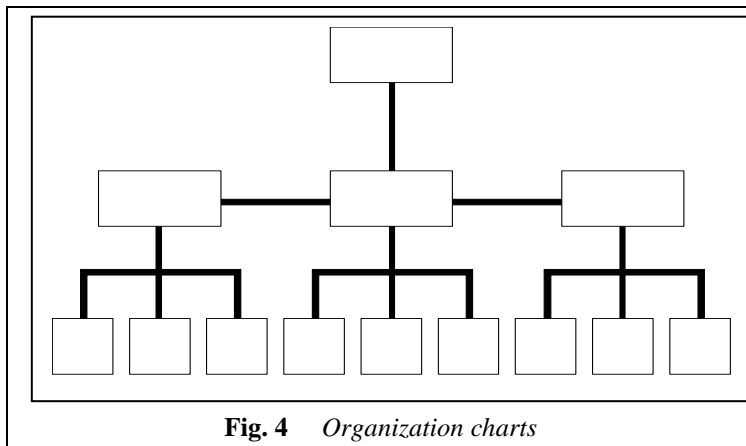


Fig. 4 Organization charts

Flow charts (or process charts) show a sequence, a procedure or a process. In representing a flow chart, rectangles, circles, lines and arrows are used. Flow charts show how different activities, procedures, processes merge into a whole.

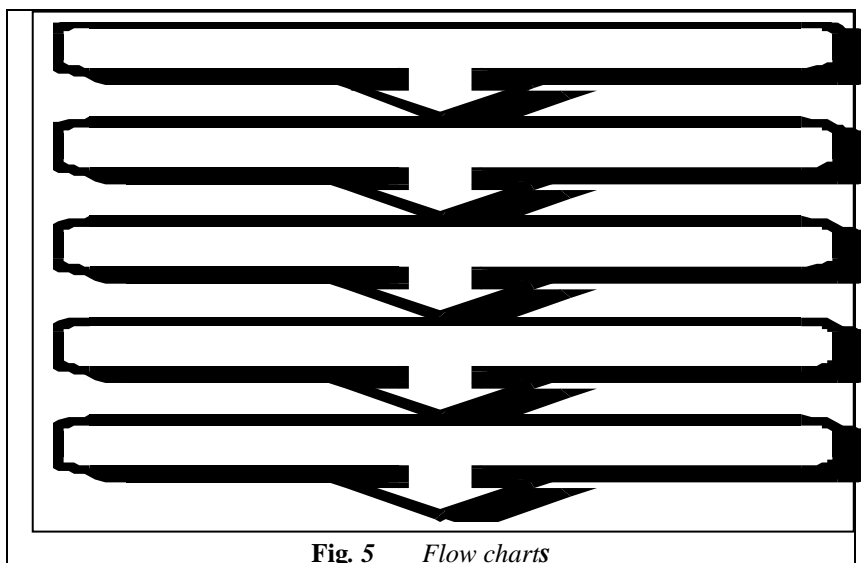


Fig. 5 Flow charts

Tabular charts (or table) carry numerical information or data. They are also used in showing time information as in school or study time tables.

Import Percentages				
	Wheat	Cotton	Steel	Oil
USA	-- %	-- %	20%	35%
England	65	95	35	10
France	15	95	30	90
Japan	85	15	—	95
Brazil	—	—	20	70

Fig. 6 Tabular charts

Time and sequence charts: These are used to show the developmental stages of an event. The landmark events are identified and arranged in chronological order. Pictures or drawings can be added to the time line to illustrate important events or major stages of development.

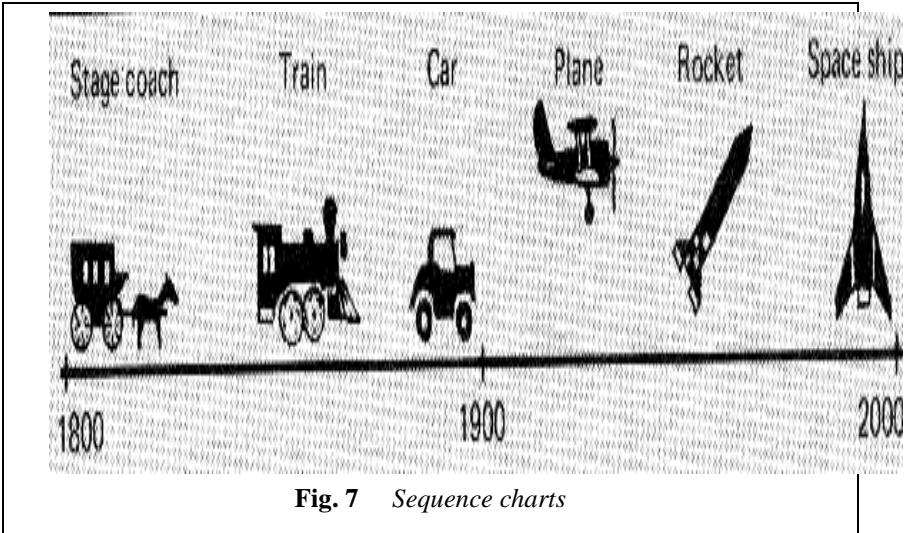


Fig. 7 Sequence charts

Strip and flip charts: The strip and flip charts are ideal for topics that have phases. The idea is to expose a part at a time. The strip chart is a single chart but with the component parts covered with strips of paper. The strips of papers are removed at appropriate times. The teacher exposes the concealed information one at a time until all the information contained in the chart are presented. A flip chart, on the other hand, will contain more than one sheet, each dealing with a specific stage or phase. For example, we can use a flip chart to present the life cycle of butterfly or cockroach. Each stage is shown on a sheet. As the teacher proceeds, he flips open the sheets one after the other. The phase under study helps to conceal the previous and next sheet. This helps to prevent distraction and to focus attention.

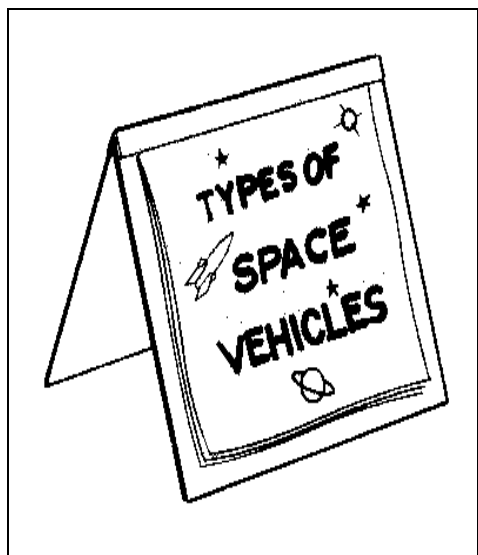


Fig. 8 Strip and flip chart

Tree and stream charts: These are mostly used for genealogy, to show composition or interrelationships of generations of families or classes. Whereas the tree chart is used to show branching sub-division of a subject, in the case of the stream chart, several small sources or tributaries finally converge to form a single stream

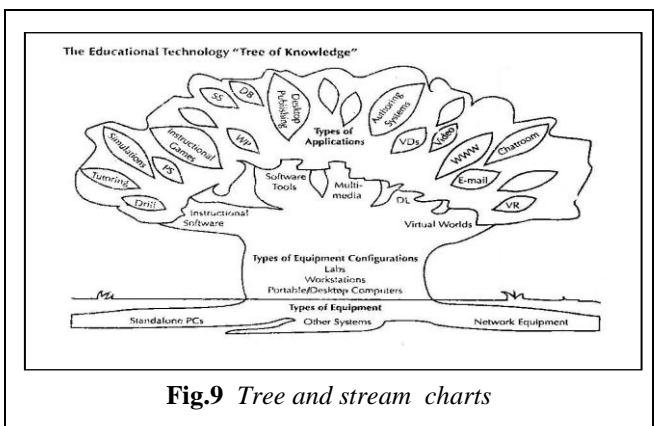


Fig.9 Tree and stream charts

Graphs

Graphs are visual representation of numerical data. They are well suited for compressing information and for showing proportional/numerical relationships. There are four major types of graphs: bar, pictorial, pie (or circle), and line. The type you choose to use will depend on the message you intend to convey and the level of your audience.

Graphs

- * Bar
- * Pictorial
- * Pie
- *Line

Bar Graph: They represent quantities of variables using vertical/horizontal bars drawn from the same baseline. Whereas the width of the bars is the equal, the height varies to indicate the measure of the quantity being represented. Bar graphs are easy to read and can be used with primary school age children. The bar graph is particularly useful in comparing similar items at different times or different items at the same time e.g. quantities of an export crop produced for different years or revenue generated from various export produce within a given year. It is best to limit the quantities being compared to eight or less to avoid confusion.

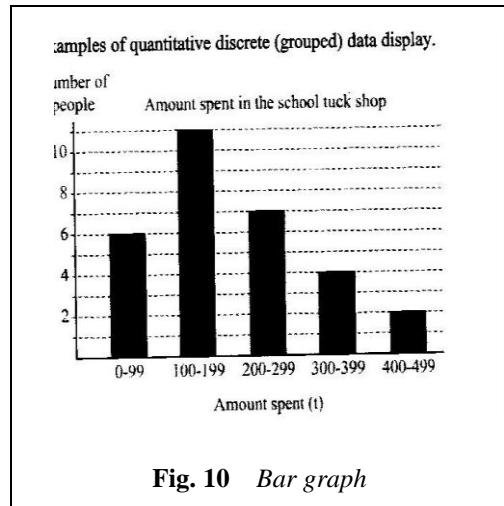


Fig. 10 Bar graph

Pictorial Graphs (Pictogram):

They use simple drawings, figures, objects or pictures to represent the data. It is an adaptation of the bar graph. The pictogram looks real, attractive and generates the learner interest. They appeal to a wide audience, especially young pupils.

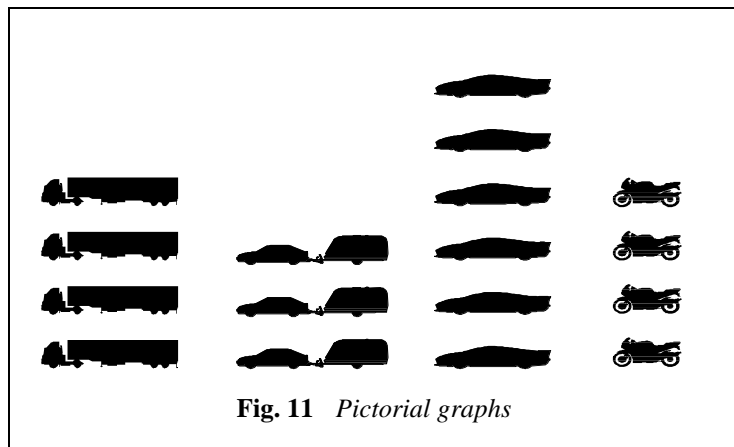


Fig. 11 Pictorial graphs

Circle (or pie) Graphs: This type of graph is in form of a circle. A circle is divided into segments, each representing a proportion of the whole. The combined parts of the whole adds up to 100%. The percentage value of each component is converted as a fraction of 360° which is the total of the angles of a circle.

The pie chart is used to show the budget allocations, scores of students in different subjects, etc. It is relatively easy to interpret. It may however be difficult to judge proportions accurately when segments are small.

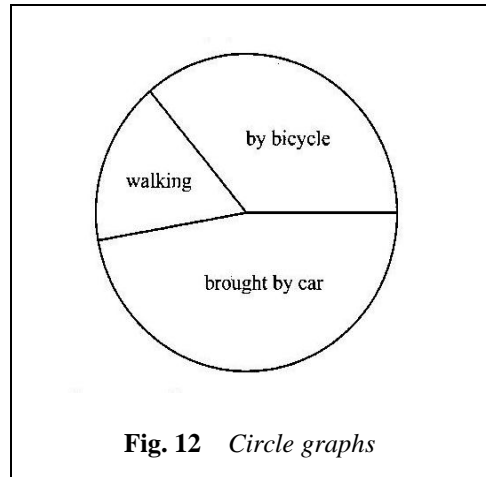


Fig. 12 Circle graphs

Line Graphs: This is the most precise and complex of all graphs. It is made up of two axes, namely: the vertical and the horizontal axis. The horizontal axis bears the variables being measured while the vertical axis bears points to which values have been ascribed. Line graphs are very useful in plotting trends or relationship between two sets of data. They help to simplify a mass of complex information. They are used for presenting such information as rainfall, temperature, blood flows, cost of living, etc over a period of time.

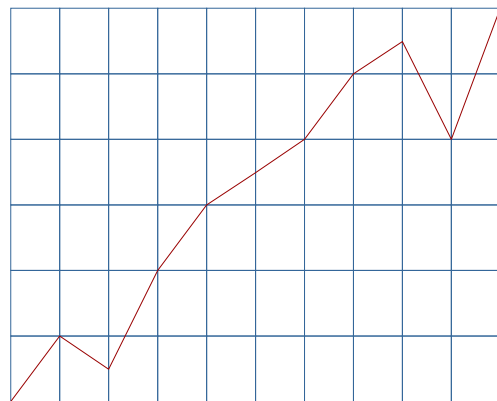


Fig. 13 Line graphs

Posters

Posters are visuals that communicate using a combination of lines, colour, and words and are intended to catch and hold attention. They are used to announce events or pass on brief information or messages. Posters to be effective, must attract attentions, carry provocative wordings, excite curiosity, be humorous, creative and persuasive.

Posters can be used in various ways for instruction. They can be used to stimulate interest in a new topic or school event. They can be used for motivation or to promote positive attitude to things like reading, safety or healthy habits.



Fig. 14 Pictorial graph

You can use the poster to promote visual literacy among your students. You can ask students to read and interpret a poster. They can be asked to design their own posters on various subjects and this will promote some positive values.

Posters can be obtained from various sources. Advertisements in newspapers and magazines; catalogues of companies; shops and supermarkets, government departments, religious; institutions, etc. are good sources of posters. The teacher and his pupils can make their own posters.

Cartoons and Comics

A cartoon is a pictorial representation or a caricature of a person, idea or situation that is designed to influence public opinion or to entertain. Most cartoons are humorous and help to ridicule and expose the evils in society. They employ caricature, exaggeration, symbolism and humour. Cartoons derive their influence from their compactness, simplification of issues and sharply drawn illustrations mixed with humour. Cartoons can be found in newspapers, magazines and periodicals. They are easily and quickly read and appeal to children and adults alike.

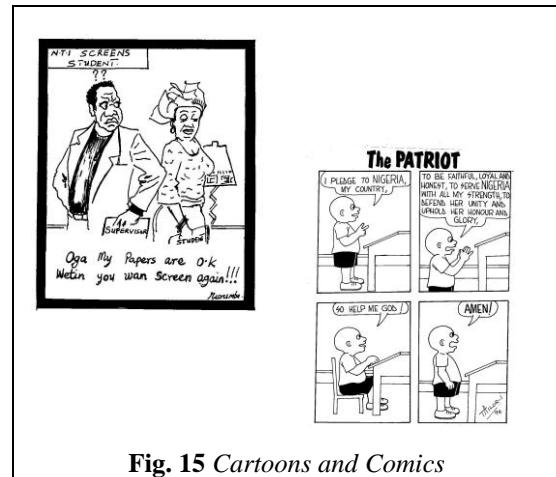


Fig. 15 Cartoons and Comics

Cartoons in the school system can be used to promote good behaviour and discourage undesirable habits or behaviours. When properly utilized, cartoons can be made to stimulate the interest of students and encourage them to participate in class activities. Cartoons can be subject to various interpretations and that is why the producer should ensure that the message is communicated to the intended audience.

The comic is a form of cartooning in which a cast of characters enacts a story in a sequence of closely related drawings designed to entertain the reader. Comic books and magazines stimulate the reading habits of young people.

ACTIVITY 2

1. Define non-projected visuals.
2. What are still pictures? Describe five advantages and three limitations of still pictures as instructional media.
3. How are still pictures used and what precautions should be taken in using them.
4. What are graphic materials? Give five examples of graphic materials.
5. Discuss the distinguishing characteristics of the following:
 - (a) Still pictures
 - (b) Graphic materials

- (c) Charts
- (d) Drawings
- (e) Posters
- (f) Cartoons and comics
- (g) Select a theme or topic in your teaching subject area and make appropriate graphs, charts, drawings, posters, cartoons or comics.

MODELS AND REALIA

Models are 3 - dimensional representation of a real thing, situation or scene. Three-dimensional instructional materials are those materials that have thickness, i.e. they have length, breadth and height or depth. The two-dimensional materials, on the other hand, are flat, having only length and breadth.

Realia refers to real models and objects such as coins, tools, artifacts, plants, animals, etc. Realia give direct purposeful learning experience. However, it is not always possible to use real things. They are not always available when and where they are needed. At times, they may be too big, too complex, too heavy, too costly or too dangerous to use or be brought to class. Teachers have to turn to models which are representations of real things.



ig. 16 Models and Realia

Models may be larger, smaller, or the same size as the object it represents. The globe is for example, a reduced model of the earth. The atom may be represented by an enlarged model whereas a model may be constructed to have the exact size of the human heart or kidney. Models of almost anything can be purchased from shops (e.g. toy shops) for classroom use. When you construct a model with your students, you stimulate in them the spirit of inquiry, creativity and discovery.

Models can be made from different kinds of materials such as cardboards, wood, metals, paper, clay, plastic and plaster.

Advantages

- (a) Models simplify complex objects and may provide interior view of objects.
- (b) They concretize an otherwise verbal lesson.
- (c) They appeal to the senses and give direct purposeful learning experience.
- (d) They may provide learning experiences which real things cannot provide.
- (e) Class construction of models can promote creativity, inquiry and discovery.
- (f) Retention of learning from models tends to be more permanent than mere verbal explanations.

Limitations

- (a) Models may take a long time to produce.
- (b) The materials for the production of models may be expensive and commercially made models may also be expensive to purchase.
- (c) Models produced by the students or teacher may not be accurate and may mislead.

ACTIVITY 3

1. What are models and realia? How can they be used in improving teaching and learning?
2. Discuss the advantages and limitations of models and realia?
3. Compare and contrast models and realia
4. Obtain a real object or model and describe how you would use it to achieve a specified objective.

DISPLAY FORMATS

The non-projected visuals discussed in the preceding sections will need to be displayed in the classroom in one way or the other. You may simply hold up a single visual for the students to see it. You may use any of the following:

- * Chalk boards
- * Multipurpose boards
- * Bulletin boards
- * Cloth boards
- * Magnetic boards
- * Flip charts
- * Exhibition

The way you display your visuals will depend on the following factors: the nature of the

audience, the nature of your visuals, the lesson objectives, the instructional setting and the availability of the various display formats.

Chalk Boards

The chalk board is one of the oldest and most commonly used instructional materials in the classroom. The chalkboard is positioned in front of the classroom at a point visible to all members of the class. It was once called 'blackboard' when the colour was mostly black. Nowadays, boards and chalk now come in a variety of colours. We have various kinds of chalkboards: movable/portable chalkboards and wall/fixed chalkboards. They may be made of wood, concrete or metallic material (e.g. magnetic board).

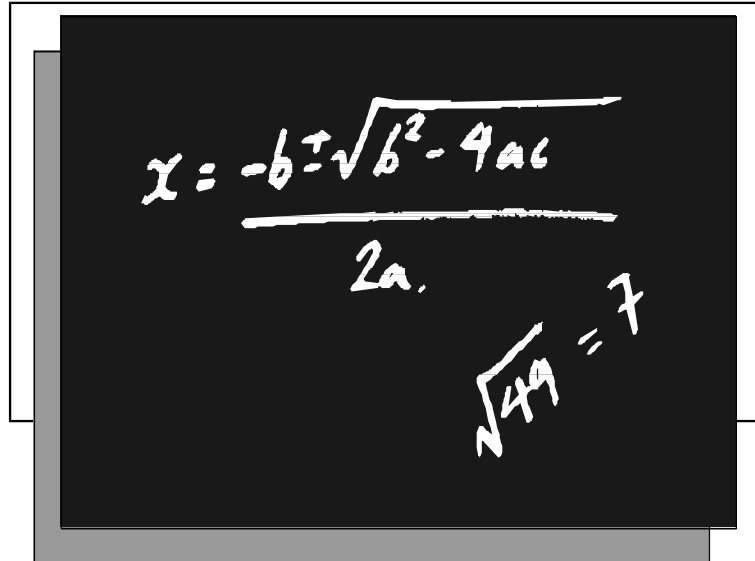


Fig. 17 Chalk boards

The chalk board can assist you in developing ideas your lesson. You can build your explanations point by point. You can present graphics, diagrams, symbols, charts and other desired illustrations. The chalkboards can be used along with other instructional materials such as models, mock-ups, charts, flash boards and other devices.

Tips

- (a) You should put, in advance, before class, any extensive drawing or writing on the chalkboard to avoid wasting the time of the students.
- (b) To avoid distractions cover material written on the chalkboard until you are ready to use it.
- (c) Face the class when you are talking.
- (d) Write and draw boldly to enable every pupil in class to see and read with ease.
- (e) Use chalkboard tools such as rulers, dividers and templates of all kinds.
- (f) Move to different positions in class to assess visibility of chalkboard work.
- (g) Write uniformly and horizontally on the board.

Multipurpose Boards

More modern classrooms have multipurpose boards which can be used for many purposes. They have a smooth white plastic surface and markers are used instead of chalk. They usually have a steel backing and can be used as a magnetic board for display of visuals. The boards can be used to project films, slides and overhead transparencies. Thus the multipurpose board can serve as chalkboard, magnetic board and projector screen.

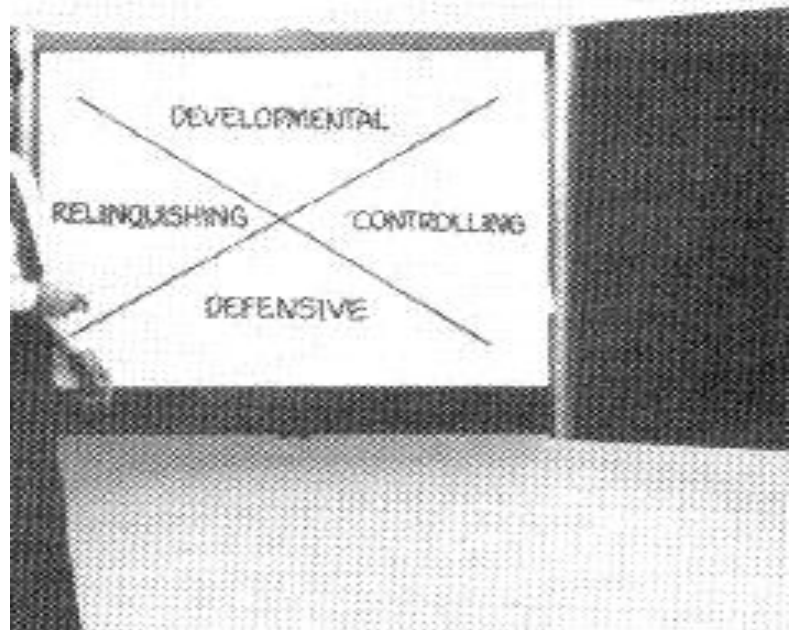


Fig. 18 *Multipurpose boards*

Bulletin Boards

The bulletin boards, also known as a notice board or billboard, is constructed with a softwood, plywood, straw board, or thick cardboard sheets. Posters, pictures, maps, charts, cartoons, comic, paintings, essays, objects, models and specimens can be attached to the board using thumbtacks, pins and other sharp fasteners. Boards come in different sizes and may be attached to the wall or kept portable for use on a table or easel.

Bulletin boards can be used in various ways to serve your instructional needs. It is intended to stimulate students interest, promote creative expression, and encourage students participation. They are used to display visuals related to class work, the best work of the learners, current events and to commemorate special occasions.

Items to be displayed on the bulletin board should be carefully selected and arranged. Plan the display on paper well in advance. Do not overload the board. Visuals no longer needed should be removed. Use attention-getting devices such as cardboard arrows, coloured pins, and cards with felt-pen lettering, etc.

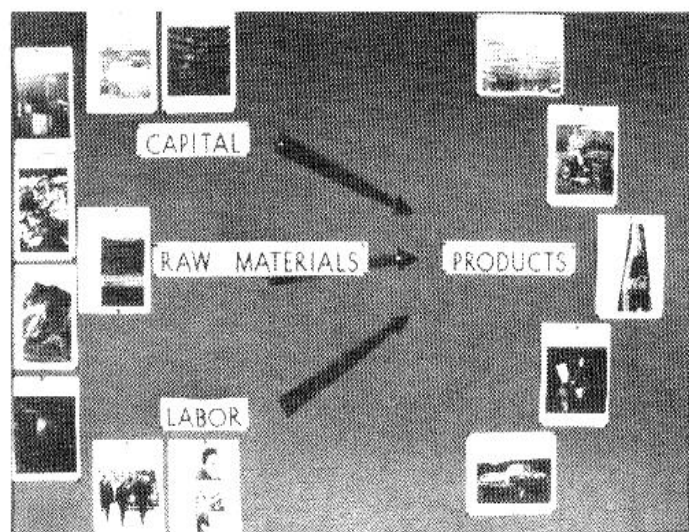
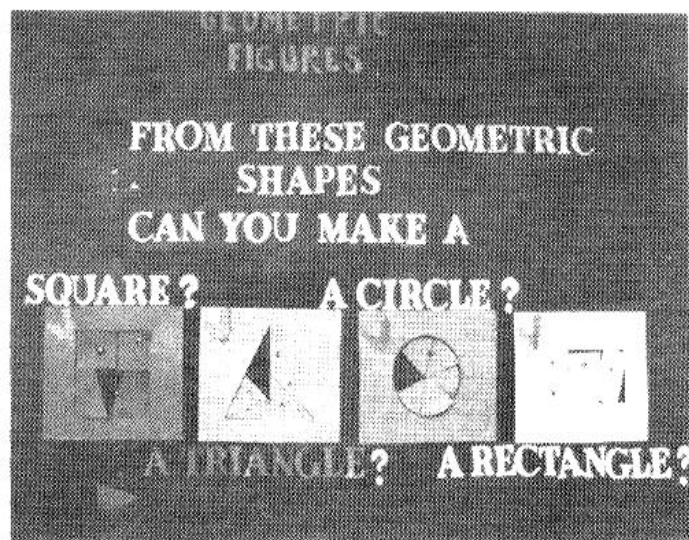


Fig. 19 *Bulletins boards*

Cloth Boards (or Flannel Board)

These are boards constructed with cloth stretched over a sturdy backing material such as plywood, masonite, soft ceiling board, or hard cardboard sheet. The background cloth may be a felt, flannelette, blanket, native woven cloth or towel.

The materials to be attached to the board may be drawings, paintings, pictures, cutouts, captions, sentence cards, word cards, light objects and specimens. These visuals are backed with flannel, sandpaper or any material with rough surface. The principle is that any material which has rough surface will cling to another if pressed lightly together without the aid of an adhesive.

When visuals need to be moved around to illustrate a process or sequence, cloth boards are particularly useful. Cloth boards can be used to illustrate stories, poems and other reading materials. Like chalkboards, they can be used to develop the lesson step by step.



Fig. 20 Cloth boards

Magnetic Boards

They serve much the same purpose as cloth boards. In the case of magnetic boards, they have metal surface which allows magnet materials to stick. Visuals are backed with a magnetic and then placed on the metal surface of the board. Any metal surface in the classroom such as steel cabinets, metal walls and doors can be used as magnetic boards.

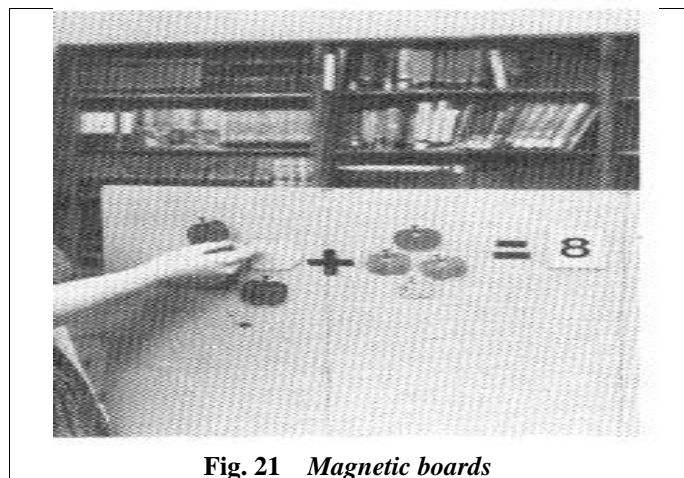


Fig. 21 Magnetic boards

Flip charts

We had earlier treated flip charts under 2.2.2. above. Unlike chalkboards, flip charts can be taken easily to where the learning group is and the display on it can be reused. They can be an effective supplement to or even a substitute for board displays. They are particularly useful for instruction involving sequential steps in a process.

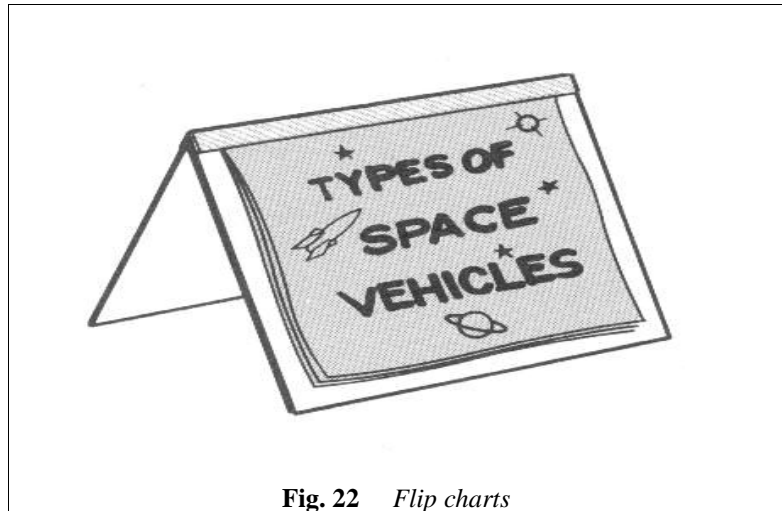


Fig. 22 Flip charts

Tips

As with other display boards, the following tip will be found useful:

- (a) Keep the lettering and visuals simple, but large enough for every one to see.
- (b) Avoid backing the students; talk to the audience not to the flip chart.
- (c) Reveal the sheets as arranged only when you are ready to discuss them.
- (d) Use colours that provide sharp contrast
- (e) Maintain proper sequence in the arrangement of the sheets.

Exhibits (or Exhibition)

When you display the various kinds of non-projected visuals discussed in this unit in an integrated manner for the purpose of instruction, we say, you have an exhibition. The exhibits on display can be used for the same purposes and in much the same ways as their individual components are used. Mode of display, techniques for using them in instruction are also similar. Exhibitions can be set up on a table, a shelf or desk or in a corner. We hear of “nature corner” in the classroom.

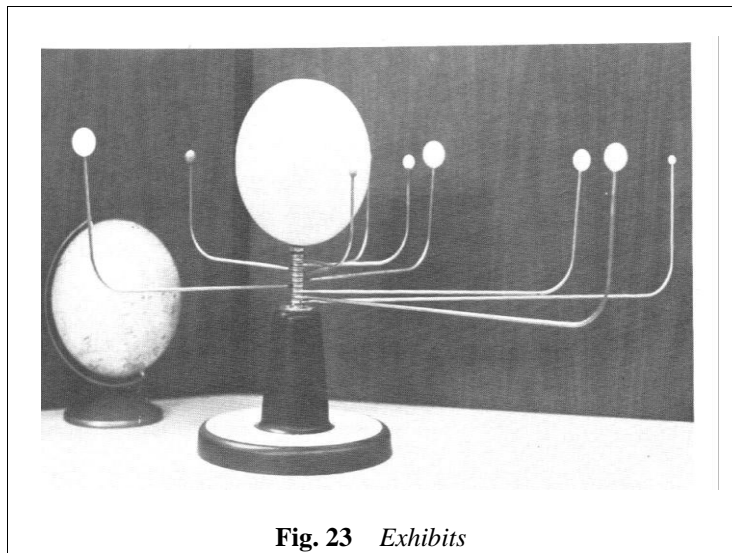


Fig. 23 Exhibits

You can make your exhibition for a theme, for a lesson, for a topic, for a unit or at the end of these. Exhibits should be well spread out so that people can see them clearly. Captions and other materials are clearly written and well arranged. It is necessary to avoid the pit fall of including visual material relating to many subjects. It is better to have a guiding theme or topic e.g. an exhibition on transportation, housing, marriage, health care, child care or water supplies.

ACTIVITY 4

1. Describe the statement that “the chalkboard is one of the oldest and most commonly used instructional material in the classroom”
2. Describe six techniques for improving the use of chalkboards.
3. Describe the various kinds of chalkboard.
4. Describe the five formats or devices for displaying visuals in the classroom.
5. State a major advantage that cloth boards, magnetic boards and flip charts have over chalkboards
6. What is the usefulness of the bulletin boards in classroom?
7. Select a topic, identify your objectives and do the following:
 - (a) Construct a bulletin board or teaching display to support the topic and objectives.
 - (b) Prepare a cloth board, magnetic board, flip chart or exhibit and show how it will be used to teach the topic and achieve the specified objectives.

SUMMARY

- This unit described the instructional media that are non-projected and not electronic. They were classified into:
 - Print media
 - Non-projected visuals
 - Models and realia
 - Display formats
- Their advantages, limitations and applications were listed. Tips on what precautions to take were also itemized.

REFERENCES

- Abimbade, A. (1997). **Principles and practice of educational technology**. Ibadan: International Publishers Ltd.
- Anyanwu, J. N. (1993). **Educational technology with practicals**. Owerri: Totan

- COL/ADB (1999) **Training Toolkit. Designing materials for open and distance learning.** Vancouver: COL/ADB.
- Heinich, R., Molenda M. & Russel, J. D. (1982). **Instructional media and the new technologies of instruction.** New York: John Wiley and Sons.
- Ike, G. A. Chimezie, O. S. & Iwu, A. O. (2002). **New educational technology.** Owerri: Onii Publishing.
- Imogie, A, I. (2002). **Improving teaching and learning: An introduction to instructional technology.** Benin: Joe Seg Assoc.
- Onuebunwa, S. E. (1999). **Educational technology: An introduction.** Owerri: Cape Publishers.
- Ughamadu, K. A, (1992). **Educational technology and microteaching for teacher effectiveness.** Onitsha: Emba Printing and Publishing.