UNIT 17  INSTRUCTIONAL MEDIA AND RELATED SKILLS

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17.1  INTRODUCTION

Through Block 2 you have got acquainted with concepts such as instructional system, process variables, etc. In order to achieve the desired educational output (i.e. behavioural changes in the learners) the teacher - a system designer - has to plan for various appropriate processes. These processes can be effectively channelised with the help of teaching-learning methods and media. We have discussed various teaching-learning methods — teacher-controlled, learner-controlled, group-controlled, etc., in Block 2 and related skills in the previous units of this Block.

In this unit we intend to explain the role of instructional media in the teaching-learning process and how they can help the teacher and learners achieve the objectives effectively and efficiently.
17.2 OBJECTIVES

After going through this unit, you will be able to:

- classify instructional media on the basis of their characteristics,
- plan and execute the use of chalkboard and other types of board,
- prepare and use non-projected media such as charts, posters and models,
- use projected media such as slides, filmstrips, and films in classroom instruction,
- state various uses of Computer Assisted Instruction in individualised learning, and
- explain the role of mass media in instruction.

17.3 NATURE OF INSTRUCTIONAL MEDIA

As stated above, media are used to help the learner achieve the learning objectives more effectively and efficiently. You are familiar with common instructional media (generally called ‘teaching-learning aids’) such as blackboard (chalkboard), charts, models, video film, radio, etc. Some of these media are used to create readiness in the learners for learning experiences. They provide clarity, precision and accuracy in processing information. They create visual images which help retention of the learnt concepts. Some of them also provide stimulation to more senses than one (e.g. video film or instructional television). Many media have the capacity to provide real (direct) or almost real experiences such as cardboard models of geometrical concepts, cuboids or case studies for learning principles of management. Some media provide opportunity to the learner to learn individually at his/her own pace (e.g. computer-assisted instructional programme) or in a small group (models, assignments, newspaper cuttings for discussion, etc.) or in a large (e.g. 35 m.m. film or slides).

Instructional media can be used in all phases viz. development, organisation and summarising phases of classroom instruction. They can be used with learners of any age group.

17.4 CLASSIFICATION OF INSTRUCTIONAL MEDIA

Instructional media can be classified on the basis of their characteristics. We have studied in section 17.3 the nature and major characteristics of media. Let us now discuss how to classify these media using their important characteristics. We will use four characteristics for this purpose:

- stimulation provided to sense organs,
- learner’s control over media,
- type of experience they provide, and
- their reach.

17.4.1 Classification of Media according to the Sense they Stimulate

Box 1 lists media in a traditional classification i.e. according to the senses they stimulate and the message code they transmit. It may be noted that new emerging media (see item viii) box 1) stimulate more than one sense; they stimulate not just the ear or eye but both and sometimes touch. These media function in a more interactive way.
Classification of Media

i) Audio
- Voice (any human sender of the message)
- Gramophone records
- Audio tapes, to be used in a tape recorder or language laboratory
- Stereo records/tapes
- Radio
- Telephonic conversation

ii) Visual (verbal) print or duplicated
- Textbooks, supplementary books
- Reference books, encyclopaedia, etc.
- Magazines, newspapers, etc.
- Documents, clippings from published material
- Duplicated written material

iii) Visual (non-projected, two-dimensional)
- Messages/pictures on roll-up board
- Flat picture, cut-outs
- Posters, charts, graphs, etc.
- Cartoons, comics, etc.

iv) Visual (non-projected, three-dimensional)
- Models, mock-ups, display materials
- Diagrams
- Globes or maps (three-dimensional)
- Specimens (animate or inanimate)
- Puppets

v) Visual (projected-still)
- Slides
- Filmstrips
- Overhead transparencies
- Micro image system: microfilm, microcard,

vi) Audio-visual (projected-motion)
- Film
- Television
- Close-circuit television
- Video cassettes

vii) Multimedia packages (for more than one sense)
- Slide + tape
- Slide + tape + workbook
- Radio + slide or posters (radio vision)
- Film + posters + workbook (print materials)
- Television + workbook (print materials)
- Any of the above + introductory and summarising talk by the teacher/leader of the group.
New emerging media (all of these are multisensory)
- Teleconferencing (Group discussion through telephones)
- Cable television (localised television where feedback is possible)
- Television/communication satellites
- Computer networking
- Video discs
- Mini computers/micro computers/word processors.

Check Your Progress 1
Notes: a) Write your answer in the space given below.

b) Compare your answer with those given at the end of the unit.

Make a list of the various aids available in your institution. Classify them according to the senses they stimulate.

17.4.2 Classification of Media according to the Learner's Control over them

Another characteristic of media which can be used to classify them is the extent to which they can be controlled by the learner.

While using a textbook or an audio tape for learning, the learner can use them at his/her own pace, he/she may go back and read the paragraph or listen to the part of the programme again and again. So these may be called learner-controlled media.

Now think of a television programme. The messages are transmitted according to the pace of the sender and it may not be appropriate for an individual learner. Mass media like radio or TV offer no control to the learner.

Thus various media can be placed on a continuum ranging from no control by the user to high control by the user. (See Fig. 17.1.)

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>No control</td>
<td>Projected Media</td>
<td>Non-projected Media</td>
<td>High control</td>
</tr>
<tr>
<td>(TV, Radio)</td>
<td>Media</td>
<td></td>
<td>(Computer, Tape recorder)</td>
</tr>
</tbody>
</table>

Fig. 17.1: Learner's Control: A Continuum

All new emerging media (Box 1, viii) are designed to provide more and more control to the learner over the learning process.

17.4.3 Classification of Media according to the Type of Experience they Provide

Media can be classified on the basis of the type of experience they provide. (See Fig. 17.2). The cone of experience has a broad base of direct purposeful experience which can be provided mostly through instructional media consisting of real objects, specimens and methods such as field visits, observation, experimentation, etc. As we move away from
the base towards abstraction (verbal messages only), we come across many instructional media which provide indirect or vicarious experiences. They differ in their degree of abstraction. Case studies, video and TV programmes provide more life-related experiences whereas radio or audio tapes tend to provide only verbal experiences.

17.4.4 Classification of Media according to their Reach

Media can also be classified according to the size of the group of learners (or an individual learner) for whom they are intended and used.

A computer-assisted instructional (CAI) programme, for example, is prepared for individualised learning. It takes into account the difficulties which may be encountered by the individual learner (who is learning on his/her own without any help from the teacher or peers) in his/her learning and it aims at providing help to solve/overcome these difficulties.

Non-projected aids or graphic aids, such as charts, maps or models are used for a small group of learners. They are not quite useful to teach a class of 70-80 students.

Projected aids, such as slides or filmstrips can reach a larger group because of their quality of enlargement. Media, such as TV, radio or newspapers (print) reach millions of people at a time. Hence they are called mass media.

We shall discuss the preparation and use of instructional media in detail in following sections. For this discussion we will classify the media into three major classes viz. individualised media, media for a small group, and mass media. They are discussed in sections 17.5, 17.6 and 17.7 respectively.

17.5 INDIVIDUALISED INSTRUCTIONAL MEDIA

Though the teacher generally plans for classroom interaction (i.e. interaction in small or large groups), there is always a need to provide an opportunity for individualised learning. In such an individualised learning situation, the learner works with the help of self-learning material which is in print form or in the form of computer-assisted instruction. In this section we shall discuss both these types.
17.5.1 Programmed Learning Material

We shall discuss the behaviourist approach to learning developed by B.F. Skinner in Course ES 332: Psychology of Learning and Development. Application of the theory of learning (theory of operant conditioning) can be seen in education in the form of programmed learning or programmed instruction.

Programmed instruction presents learning material to the learner in small steps which are called frames. Every frame consists of a small bit of information and a question/activity which calls for active and overt response from the learner. Overt response is a response which can be observed. The learner is expected to read the information given in the frame and make a response. He/she is required to act overtly e.g. to write, draw, label the diagram, etc. Before the learner goes to the next frame he/she is informed whether his/her response is correct or incorrect. The frames in programmed learning material are prepared in such a manner that 95 per cent of the responses made by the learner are correct. This knowledge of results provides immediate feedback and reinforcement to the learner. He then proceeds in the same way through the remaining frames in a sequence.

Programmed learning material can be prepared by the teachers after they have received some training on it.

There are many other forms of self-learning material (SLM) as well. The SLM produced by Open Universities for various courses (and also the one which you are studying now) is from a linear programmed learning style. Instead of providing small bits of information in one frame, here we have a section (consisting of two - three paragraphs) on a particular sub-topic which is then followed by some exercise or self-check questions. Answers to the self-check questions provide feedback to the learner.

17.5.2 Computer-Assisted Instruction (CAI)

CAI is based on interaction between the computer and the learner. The computer presents information (both verbal and visual — and also supported by sound in case of multimedia) to the learner. The learner interacts with this information, for which adequate instructions are provided on the screen. The capabilities of the computer to simulate (to create and provide almost real experiences), to animate, to replicate, to generate new examples, etc., are used for preparing the CAI programmes.

In CAI, the computer utilises various instructional modes. The relatively important modes among these are as follows:

i) Drill and practice: In this mode, the computer presents the learner with a series of exercises which he or she does by giving some responses. It provides the learner some feedback about the answer (i.e. response) in the form of a congratulatory message if it is right, or a corrective comment if it is wrong. Thus, CAI provides drill and practice with repetition at a pace that can be controlled by the learner. The computer proceeds only when mastery is achieved by the learner.

ii) Tutorial mode: In the tutorial mode, as in programmed instruction, information is presented in small bits followed by questions. The learner's response is analysed by the computer and appropriate feedback is made available to him/her.

iii) Simulation mode: Learning experiences regarding real life systems or phenomena are provided to the learners through this mode. For example, the Gaseous Laws, Nitrogen Cycle, the Ecological system, etc., can be shown to the student through computer in a simulation situation.
iv) **Discovery mode** : This mode uses **inductive approach** to learning wherein the problems are presented and the learner solves them through trial and error.

v) **Gaming mode** : In gaming mode teaching can be imparted, through play or game.

National Council of Educational Research and Training (NCERT), has been running a project called CLASS (Computer Literacy and School Studies) Project in secondary and higher secondary schools for some years in India. Initially BBC Micro Computers were provided to the schools under this project. Software packages in Mathematics, Physics, Chemistry, Biology, Geography and English were also provided to schools. Now instead of Micro Computers, Personal Computers (PC) with more memory have been provided to the project schools.

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**Check Your Progress 2**

**Notes**:

a) Write your answer in the space given below.

b) Compare your answer with those given at the end of the unit.

What are the important characteristics of individualised instructional media?

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**17.6 PREPARATION AND USE OF MEDIA FOR SMALL GROUPS**

Some media are used for small groups. These media may be further classified into non-projected and projected visual media.

**17.6.1 Non-projected Media**

Please refer to Box 1 (items iii, and iv). You will see that there are many media which do not need much infrastructural facilities such as electricity, projectors, etc. These media can be termed as non-projected media. Major non-projected media are discussed below.

1) **Boards** : Use of various types of board is very popular in all schools. Let us discuss various types of board used by the teachers.

a) **Chalkboard** : When the teacher uses a chalkboard/blackboard, he/she is interested in visual display. This display on wooden or glass board is made with the help of a chalk which may be white or of any other colour. Traditionally the colour of the board used to be black, and that of the chalk, white, but it is equally advisable to use different colours for board, e.g. green, white and corresponding colours of chalk e.g. yellow chalk on green board, etc.

You have been using the chalkboard in your class or you must have seen your teachers using the same. List below the purposes for which the board is used in the classroom.

1.  
2.  
3.  
4.  
5.  
6.  
7.  
8.  
9.  
10.
Yes, the teacher uses chalkboard for writing important points, keywords and new concepts, for drawing figures, diagrams, and for solving problems step by step. A chalkboard can also be used by the students.

This aspect will be discussed a little later. First, let us examine the skills required by the teacher to use chalkboard effectively for teaching-learning purposes. Using the chalkboard is a skill. This skill may be broken down into various sub-skills or components. For neat and systematic presentation, the teacher should be aware of the following five components of chalkboard work.

i) The size of the letters should be such that it is easily legible for the students sitting in the back benches in the class.

ii) The space between letters and words should be adequate, chalkboard writing looks neat if proper space is provided between two words. The words would also be legible if care is taken to provide proper space between two letters of a word. Space between two lines should be adequate and uniform throughout.

iii) The matter should be written on the chalkboard in straight lines. For this purpose the teacher should move along the board while writing and not stand at a fixed point near the board. Unless the teacher moves along as he writes on the chalkboard, his writing on the board would be tapering. Many teachers have problem in writing on the blackboard.

iv) Chalk of different colours can be used to write, draw, underline important points and keywords, colour a specific portion in the diagram, etc. It increases attractiveness of the chalkboard work. However excessive use of coloured chalks should be avoided.

v) Organisation (layout) of the chalkboard display also matters a great deal. Upper portion of the chalkboard can be used for displaying the title of the lesson. Proper planning of chalkboard work on the remaining portion is very essential. For subjects where diagrams, figures, etc., form an essential part of instruction (such as Science, Maths, Geography, etc.), the chalkboard may be divided into two parts. The left portion may be used for the figures and diagrams and the right portion may be used for writing.

Some writing on the chalkboard has to be cleaned in order to provide space for more presentation. Otherwise the board will be full of writing and may give confusing messages to the students. Hence the teacher must plan the use of chalkboard space with utmost care.

Should a teacher spend his/her time in drawing diagrams and figures in the classroom? is a question likely to bother many of you. If the diagram is drawn on the board while explaining the concept, it reduces the complexity and increases the students' understanding. One may use a chart where the diagrams are already prepared or readily available for use. This saves time and also brings neatness and accuracy in presentation. We will talk about charts a little later.

If the teacher wants to draw maps, figures, diagrams, etc., in the classroom, he/she may use (i) template (readymade cutouts of these visuals), (ii) other geometrical apparatus (such as ruler, compass, etc.) or dotted figures drawn on paper which can be imprinted on the board with chalk dust (see Figure 17.3). But care must be taken to maintain accuracy (e.g. it is not advisable to draw parallel lines on the board without the use of ruler and right angled triangle, or draw a map of India without using any measurements). The teacher should always provide correct messages through chalkboard work to the students.
We have discussed the skill of using the chalkboard in the classroom while using the teacher-dominated teaching techniques such as lecture, demonstration, etc. These techniques involve one-way communication. We may also refer to other situations in the classroom where the teacher uses small group methods such as group discussion, group assignments, etc. In this case there may be more than one board on the front wall of the classroom. Points for discussion, questions, assignments for different groups may be written on different boards. Even in such a situation, the boards are used mainly by the teacher. Think of a situation where the students may like to use the board during their group work. In this case we may use a part of the remaining three walls of the room as boards. With such boards and the flexibility in moving about and rearranging the furniture in the classroom, use of teacher-controlled techniques can be reduced and learner (or group) determined methods can be increased.

The use of chalkboard as discussed above is about instruction within the four walls of the classroom. Do you think the outer walls of the classroom (i.e. the corridor and the school building) could also be fruitfully used as chalkboards? There are many schools which utilise the space on the walls to communicate messages to students, parents, and visitors.

So far we have discussed the skills associated with the use of chalkboard, but for effective teaching and learning we cannot depend on the chalkboard only. There are many other types of boards (for displaying other graphic aids and visual materials) such as flannel board, roll-up board, magnetic board and display board which are discussed very briefly as follows.

b) Flannel board: This is prepared with the help of flannel cloth. A piece of flannel or sand paper is pasted on the back side of the graphics (pictures, photographs, flash cards, etc.) to be displayed. These graphics stick to the flannel board if pressed softly. You can remove and rearrange them if need be.

Flannel units can be prepared for different topics. It is especially useful when the topic has continuity. If you are teaching topics such as ecosystem or food chain in the nature or Nitrogen Cycle, every component can be fastened on the flannel along with your explanatory comments. This helps in understanding difficult concepts by reducing their complexity. It also attracts the attention of the students. Students can also be encouraged to prepare flannel units for their group presentation when you are using group methods.

c) Bulletin board or display board: A bulletin board or a display board is a soft board covered with felt cloth. The material to be displayed is pinned to this board with the help of drawing pins. You may use different colours for the felt cloth. Graphics such as graphs,
posters, a small chart, photographs, pictures, etc., can be displayed and taken out with ease while teaching.

You may also use this board for displaying additional information after teaching any topic (e.g. fuels). If you have only touched non-conventional energy resources, such as solar energy, wind energy, etc., additional information from newspapers, photographs can be displayed on the board for a week or so. You may also use the display board for displaying material before starting any particular teaching unit to create interest and arouse curiosity among the students.

Learners can also use display board to display materials prepared by them such as an essay, a picture, a poem or a collection of photographs on a particular topic, etc. This provides an opportunity to present learners' work before the class and encourage them to participate more actively in the process of learning. The learners may be encouraged to prepare wall paper which could be displayed for a longer time.

In short, the teacher can utilise the walls of the classroom (both inside and outside) through various types of boards and communicate visual messages to the learners. The learners also should be encouraged to use the boards— chalkboard, flannel board, display board, etc., for various curricular and co-curricular activities.

ii) Charts: A chart is a simple flat, generally (but not necessarily always) pictorial, display and material. Information can be very effectively presented through charts, if planned properly.

You might have seen various types of charts being used by the teachers. Their common elements are a caption (title) and the actual message. The message may be verbal, graphical (pictorial) or a combination of both. Generally the caption is written in bold letters at the top, sometimes even at the bottom.

Charts are very simple to prepare. Generally they are prepared on a card paper (these can be folded for storage purpose) or on mounting board. For preparing any chart you must give thought to the following aspects:

a) Verbal message: Select appropriate words. Too many words in one chart makes it crowded. The size of the words should be such that it is visible to all the students in the class, but at the same time it must be kept in mind that charts may not be useful for a class of sixty or more students.

i) You may use different colours for showing differentiation (of concepts, terms, etc.). You may also use block letters for catching attention.

Generally stencils (plastic/acrylic cutouts) for letters are used. Stencils of different sizes of letters are available in the market.

b) Graphic message: Verbal message can be effectively supplemented by graphics (such as figures, diagrams, graphs, maps, pictures, photographs, etc.). The size of the graphics should be appropriate for the size of the chart. You may use various colours for drawing graphics. The graphics may be drawn on the chart or may be enlarged with the help of an epidiascope or OHP. An actual graphic (such as a picture or a map or graph from newspaper or magazine) can also be pasted on the chart. This type of chart is called collage.

Proper planning of placement of graphics and verbal message should be done before preparing a chart.

Types of Charts: The charts may be classified according to the style of presentation of the message.
a) **Tree chart** can be used to present a particular dynasty e.g. Bhonsale dynasty or Peshwa dynasty.

b) **Classification chart** is used to present classification e.g. plant kingdom, or animal kingdom.

c) **Flap chart** have flaps which can be opened to disclose the message underneath. They are prepared using two chart papers.

d) **Collages** are charts where information, pictures and photographs, from other sources such as newspapers, magazines, etc., are pasted. They can be more attractive because of coloured graphics.

e) **Overlays**: Though a chart is a flat two-dimensional aid, you can use two to four other flaps and disclose the information by turning them one by one e.g. an overlay of general vicera of human body can be prepared.

Overlays give additional dimension to the charts. Overlays can be static or dynamic i.e. used to show movement. For example, in Geography while showing low and high pressure belts on earth, strips of paper across the chart can be used and these can be moved upward or downward to show variations in pressure.

In terms of how they are used, instructional charts can be classified as follows:

i) **Classroom charts**: These are used to supplement the explanation(s) given by the teacher in the classroom itself. They can be further classified as wall charts and flip charts. Wall charts are hung on the wall. Flip charts are a series of charts on one unit which are to be shown one after the other. They can be put on the chart stand and can be flipped backward like the sheets of a calendar. (See Fig. 17.4.)

![Fig. 17.4: Use of a set of pre-prepared flip-charts to show the various stages of a seven-stage process by progressively building up the complete process.](image)

ii) **Exhibition charts**: These charts are prepared on a particular theme or a concept (e.g. population education, non-conventional energy resources, etc.) and are used for exhibition purposes. They may be displayed in the corridor for a week or so. While celebrating any particular event such as Science Day (28th February) or Population Day (11th July) or Children's Day (14th November), charts can be prepared and exhibited. This helps in creating a learning climate both in the school and in classroom.

Printed charts are easily available in the market, but if they do not suit your needs, you can prepare your own charts. Stencils, plastic cutouts, etc., will help you in preparing the need-based charts.
Computers offer a lot of flexibility and experimentation in planning the layout of the chart. The latest technique of preparing a chart is by using computers. With the help of various computer software, charts can be planned on the screen, printed using a printer and enlarged to suit the need of the teacher and the students.

c) Posters: Posters are used to present a single message boldly to the learners. Using minimum words and minimum colours, posters can display the message very effectively. Posters are self-explanatory. They are used to supplement explanation. Do you remember some effective posters (e.g. on Adult Literacy Campaign or Save Fuel Campaign)? Posters are basically mass media. They are printed in thousands so as to reach their message to the masses.

As a teacher, you can approach various organisations such as the health department, the solid waste management department, the energy department, etc., and collect the posters prepared by them. They can be effectively used to communicate accurate messages to your students. Posters on blood donation, blood groups, tree planation, etc., can be directly used for classroom teaching.

iv) Models: Unlike charts and posters, models are three-dimensional visual aids. Models provide representation of the real things in all respects except size and shape.

Models may be simple (static), sectional or working. Simple models such as a thermocol model of a cell show different parts of the cell, but these parts cannot be separated. In a sectional model of an eye, for example, all the parts of an eye in the model can be separated, shown to the students and can be replaced. You may like to list some sectional models in subjects like Science, Geography, etc.

Working models are used to show actual operation or working of a real object. A working model of the circulatory system of the human body will show actual the circulation of impure and pure blood. A working model of generation of hydroelectricity using turbines will actually light a lamp with the use of electricity generated.

Preparation of models: Materials used for preparing models may include thermocol, paper, wax, plaster of Paris, cardboard, etc. In teaching of Mathematics you may like to use straws, card paper, match sticks and rubber bands and so on. The idea is to convert abstract concepts into reality or near reality. For example while teaching Euler's formula in Geometry, you may use card paper to prepare different types of cuboids.

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Check Your Progress 3

Notes: a) Write your answers in the space given below.
b) Compare your answers with those given at the end of the unit.

i) List at least three advantages of using a flannel board.
   a) ...........................................................................................................................
   b) ...........................................................................................................................
   c) ...........................................................................................................................
   d) ...........................................................................................................................

ii) State whether true or false.
   a) One can display both pictures as well as verbal (written) material on the display board
   b) A model is a two-dimensional representation of the real object
   c) Posters need explanation while using them in the classroom
   d) A chart should generally have a caption
   e) If the teacher is not careful in using a model, the model can create wrong impression about the size and shape of the object it represents.
17.6.2 Projected Media

The media such as slides, filmstrips, films or overhead projector transparencies are called projected media because they all need to be projected on the screen with the help of some projector. On projection, the message on a slide or transparency gets magnified several times and hence can be seen by a large group of students. In this section we shall discuss some of the major projected media used in education.

a) Slides: Slides are of two types - handmade and photographic. Handmade slides can be prepared by drawing/writing on the transparent film. You may cut the film into 24 x 18 mm (single frame) or 24 x 36 mm (double frame) pieces and mount these on cardboard or plastic mounts readily available in the market.

Photographic slides can be prepared using a positive film. You can use single lens reflex (SLR) camera for photography. Preparation of slides needs proper planning. After selecting a topic for teaching through slide, you have to write a script. Then the filming is done. For example, if you wish to develop a slide show consisting of 10-12 slides on application of the solar energy, you might like to include the use of solar cooker, solar heater, solar batteries, solar pumps, etc.

You have to decide whether you wish to make slides from live situations based on actual field shooting or from photographs or drawings readily available. If it is live, the next step will be to select the sites and shoot the same on the film. On the other hand if it is from the pictures/drawings, you should collect them or get them done by the artists first and then do the shooting. Care should be exercised to maintain accuracy. Unnecessary details or irrelevant content in the frame should be avoided.

One latest technique is to use computer graphics for preparing the slide on the colour screen and shooting the same directly from the screen. The computer offers a lot of flexibility in planning and preparing slides.

To project the slide we need slide projectors. Slide projectors are of two types, one which is operated manually and the other which is automatic (with remote control). In a manually operated slide projector, two slides can be arranged at a time and while one is projected on the screen, the other can be replaced (See Fig. 17.5). In an automatic slide projector (or slidomatic) there are trays in which 20 to 120 slides can be arranged in an order. The projector projects them one by one. With the help of remote control system you can go backward or forward, you can pause or increase the speed of presentation.

The slides have to be projected in a dark room. Since it is a visual medium, background commentary on the content of the slides may be necessary. The commentary can be made by the teacher while showing the slides or it can be pre-recorded and played on the tape recorder along with the projection. But this has to be synchronised; the commentary and the visuals should match one another. A machine called synchroniser can be attached to the automatic slide projector. By adjusting the speed of the commentary, the commentary and the visuals can be synchronised.
b) **Filmstrips**: Like slides, filmstrips also can be prepared by drawing/writing on strips or by photography. The only difference is that a filmstrip has a fixed sequence of still pictures and the text to be projected whereas the slides can be arranged in the way you desire.

A filmstrip can be manually projected using a filmstrip projector. This also requires a dark room for good visual effect.

c) **Film**: There are many advantages of a film over all still visuals, both non-projected and projected. The other stills can show what has happened, the film can show what is happening—the action and the process. There is a continuity of information in the film which gives an appearance of motion. The film can bring the outside world into the classroom. The facilities offered by the camera such as close-up, taking in the wide canvass, etc., can enrich visual experiences. A film can be shown to a large audience and it also can be incorporated in your classroom teaching. A major limitation however, is the requirement of infrastructural facilities such as electricity, a projection room, projection screen, the maintenance of projector, etc.

Some of the techniques such as animation used in the film also help understand concepts in a much better way.

Now with the advent of video technology which offers more control to the learner, use of 16 mm film has been reduced. 16 mm films can now be transferred on video cassettes and used with the help of the video cassette player.

d) **Over Head Projector (OHP)**: It is considered to be the most convenient and effective medium in the hands of the communicator (both the teacher and the learner). It can be used in many ways since it projects messages (verbal or pictorial) written on a transparent sheet. It can therefore substitute a picture, graph, map, chart or even a chalkboard. Let us study some advantages of OHP; chief among these are as follows:

i) An OHP can be used for a large group. As it is a projected medium, the entire class can see the projected transparency at a time. Some experiments (e.g. formation of magnetic lines) which can be explained to a small group of students can be displayed through transparencies for the whole class.

ii) An OHP does not require a dark room. Unlike other projected media (slide or film projection), the OHP can be used in the normal classroom light.

iii) It facilitates two-way communication or interaction between the teacher and the students. The teacher faces the students while using OHP. He/she can explain the concept while showing the transparency without losing eye-contact with the students. You can use it as a chalkboard too. You can write on the transparency with the help of OHP pens, just
as you write on the chalkboard. In this manner you can draw diagrams also while teaching the students.

iv) It is very easy to handle. There is no complicated mechanism for its operation. By just turning its knob or switch one can switch it on and increase the intensity of light. Even the students can use it easily.

**Preparation of OHP transparency**: The OHP can be used to project one single transparency or a roll of transparent sheets or a bunch of transparencies bound together in a desired way. Let us discuss some ways of preparing them.

i) **Single transparency**: This can be prepared

- by writing with an OHP pen on the transparency (you may write words or draw figures, diagrams, pictures, graphs, etc.). OHP pens of different colours can be used for writing or drawing. Generally black, blue, green and red colours are used since they are more visible on the projector screen. Yet another possibility is to use a coloured transparency.

- by xeroxing from any printed material; the xeroxed material can be of the same size or be magnified or reduced. Now that colour xeroxing is available, one does not have to depend on black and white xeroxing only.

- by tracing the material from the original source.

ii) **Roll of transparency**: Every OHP has a mechanism to attach a roll to it and a handle to roll the transparency on it. You can write on the roll and project the messages on the OHP screen along with your explanation/narration. Long processes (e.g. manufacturing metals from the ores, etc.) can be shown effectively using the roll. You can move the roll backward or forward.

iii) **Overlays**: When you are interested in progressively adding the details to your diagram or presentation, overlays are found very useful. (see Fig. 17.7). The transparency at the base is presented first. As the teaching process progresses, other transparencies are placed over the first one.

![Diagram of overlays](image)

*Fig. 17.7: Use of a Series of Overlays of a Tree*
Use of OHP transparency: OHP is a useful tool in the hands of the teacher to make his/her teaching effective. OHP can be used in a variety of ways. Its main uses are as follows:

i) Progressive disclosure: Since the projector projects only transparent material, a mask (a paper or any opaque material) can be used to disclose the material progressively. The mask can also be attached to the side of the transparency like a flap.

ii) You can use models prepared out of transparent material such as acrylic which is available in different colours. Working models or sectional models of acrylic can be used on the OHP.

iii) Animation: By using two transparencies while making a presentation, a movement can be shown to a certain extent (e.g. cell division).

Check Your Progress 4

Notes: a) Write your answers in the space given below.

b) Compare your answers with those given at the end of the unit.

i) State whether true or false.

a) One major advantage with an Overhead Projector is that it can be used even in the lighted room.

b) Films can be used to provide real life experiences.

c) Both slide projector and filmstrip projector can be used to show movement on the screen.

ii) Suggest two situations (or teaching points) from your subject of teaching where you would prefer to use overlays on OHP.

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17.7 USE OF MASS MEDIA IN CLASSROOM INSTRUCTION

So far we have discussed the nature and preparation of various instructional media. In this section we shall discuss the uses of various mass media in education.

17.7.1 Mass Media

We have discussed above the visual non-projected and projected media which are mainly prepared by the teacher for use in his/her own class. But he/she may also make use of mass media such as print (newspaper, etc.), radio and TV for instructional purpose. Mass media are produced on a large scale to reach the masses. Because of this characteristic, they tend to address a large audience. The teacher may not be aware of the exact profile of his/her audience. As OHP provides one-way communication, there is not any real possibility of getting feedback for the teacher (communicator). In spite of all these limitations, mass media have the capacity to reach a relatively large audience at a time, with authentic, up-to-date information.

Now let us examine how a teacher can make use of mass media viz., newspaper, radio, or television for classroom instruction.
17.7.2 Newspaper

Newspaper is a rich source of information. It communicates authentic and first hand information, e.g. earthquakes in Maharashtra or in U.P. were immediately reported by the newspapers. Photographs, recent scientific information, new strategies to cope up with natural calamities like earthquake, instructions for general public, etc. are all published by the newspapers. Contents of these news items relates to the school curriculum.

In what ways can a teacher use the newspaper in classroom? There are several ways. A teacher may use a bulletin board to display the newspaper cuttings on a particular topic. Certainly you would like to involve your students in this project. The display material could be changed every week or so. Students can be given the task of writing daily important news items on the chalkboards in the corridor.

Yet another important method is of preparing files of newspaper cuttings on different topics or issues. These cuttings can then be used for conducting group discussions, giving group assignments or even for individual study. These files come handy when you require information on a particular aspect of a topic. The files prepared by the teacher and students can be maintained in the school library.

17.7.3 Radio

In many states of India All India Radio (AIR) broadcast school programmes. The school radio generally broadcasts programmes based on primary and secondary school curriculum. They are broadcast in the state language. A copy of the broadcast schedule for a term/semester and the syllabus (i.e. content covered) are sent to schools so that schools can plan their time-table accordingly.

The school broadcast can be used and are in fact being used in two ways: one, directly at the time of broadcast, and secondly by recording the programme on audio cassette and using it whenever convenient. The audio cassette technology gives more control to the users—the teacher and the student. A catalogue of such taped programmes can be made for easy retrieval and use.

Non-broadcast mode (i.e. specially produced audio cassettes) is also useful in classroom instruction. Institutions such as Central Institute of Educational Technology, New Delhi, State Institute of Educational Technology, Educational Technology Cells of State Council of Educational Research and Training produce need-based audio programmes for school children. For example, State Institute of Educational Technology, Pune has produced audio cassettes on English textbooks for grades V and VI. Teachers can use them as an instructional aid.

Audio cassettes/radio programmes are generally prepared on topics which are more suitable to verbal communication. Sound, music, and special audio effects can be used in audio programmes as to make them more effective. These techniques help create visual images through sound.

17.7.4 Instructional TV

In most of the states, school television telecast instructional programmes directly based on or related to syllabus. A telecast schedule may be provided to schools so as to provide time for TV viewing by that particular class.

School TV programmes can also be taped on the video cassette with the help of the video tape recorder (VCR). Recorded video programmes provide more control to both the teacher and the learners.
State Institutes of Educational Technology in six states (viz. Maharashtra, Orissa, Karnataka, U.P., Andhra Pradesh, and Bihar) and the Central Institute of Educational Technology, New Delhi, produce educational TV programmes for young children (age group 5 to 11 years). These programmes are produced in state languages and are telecast through a communication satellite. These programmes are not (neither they are intended to be) directly based on the syllabus of primary education, but they provide an opportunity to children to enjoy learning outside the four walls of the classroom.

The third major instructional TV programme is UGC's Countrywide Classroom. They are produced by EMRC (Educational Media Resource Centres) and AVRC (Audio Visual Research Centres) all over the country established by UGC. Though their intended audience are college and university students and English is used as the language of communication, many of the programmes can be utilised by the teachers and students of secondary and higher secondary levels.

There are some educational programmes such as Wild America, Ascent of Man, Quest, Turning Point, etc., on related subjects which are telecast on National Network. If possible, the relevant programmes can be recorded on video cassettes and used as and when required.

Students should be exposed to such instructional TV programmes, if not in school, then at home or using a community TV set.

One major limitation of TV is the requirement of electricity. Maintenance and repair also pose problems. Inspite of these limitations, TV is a rich source of educational inputs.

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**Check Your Progress 5**

**Note:** Compare your answers with those given at the end of the unit.

i) Match the columns A and B.

<table>
<thead>
<tr>
<th>Column ‘A’</th>
<th>Column ‘B’</th>
</tr>
</thead>
<tbody>
<tr>
<td>1) Radio</td>
<td>a) Curriculum based programmes</td>
</tr>
<tr>
<td>2) Balchitravani (children programme)</td>
<td>b) Programmes for college students</td>
</tr>
<tr>
<td>3) Countrywide classroom</td>
<td>c) Oral communication</td>
</tr>
<tr>
<td>4) Newspapers</td>
<td>d) Written communication</td>
</tr>
<tr>
<td></td>
<td>e) Programmes for 5—11 age group</td>
</tr>
</tbody>
</table>

ii) Instructional television can be used for

- a) Skill development
- b) Emotional development
- c) Social development
- d) Intellectual development
- e) All of the above

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**17.8 INTEGRATION OF MEDIA**

Communication media, discussed so far, are not to be used in isolation. Mostly, they play a supportive role to various interactive methods and techniques used by the teachers. A teacher may choose to use a chalkboard, a flannel board and charts to supplement his teaching. In this situation he should integrate all these media so as to give rich learning.
experiences to the learners. In the same way OHP can be effectively used in a seminar. A group discussion can be initiated after showing a set of slides.

The important point to remember is that the media should not be used because they are available but they should be integrated with other techniques in such a way that the integration provides meaningful experiences to the learners.

### 17.9 LET US SUM UP

Instructional media play a major role in the classroom communication process. This unit has focused on the nature and characteristics of media which you should be generally using in the class.

In this unit we have tried to introduce to you a variety of media. They are classified on the basis of their characteristics such as the senses they stimulate, the learner's control over them, the type of experience they provide and their reach. You may also find out some other characteristics of the media once you get familiar with them and then classify them using those characteristics.

More detailed discussion on the use and preparation of media is presented by classifying them according to their uses: by an individual, a small group or by the masses. Visual media used for a small group can be further classified as projected and non-projected. It is observed that teachers prefer non-projected to projected visual media due to several reasons. Hence the non-projected media are discussed in more detail.

Mass media such as radio, print (newspaper) and TV are also within your reach as a teacher. The importance of their use in the classroom is also brought out in the discussion. A school may have a good collection of instructional media. If they are easily retrievable, easily accessible to the teacher, the probability of their use will increase. It is also important for you as a teacher to develop the skills of using these media confidently (and with ease) in the classroom integrating them with a variety of methods.

### 17.10 UNIT-END EXERCISES

1. Select a teaching unit from your school teaching subject. Prepare a file of newspaper cuttings on the unit with the help of the students. Use these cuttings in your teaching and assess their effectiveness.

2. Select a teaching unit from your subject area and prepare a set of exhibition charts (at least 10) on the same. Use them for introducing the unit or for consolidation after teaching is over.


### 17.11 ANSWERS TO CHECK YOUR PROGRESS

1. You may refer to Box-1 in Section 17.4.1 for classification of media in your list.

2. Characteristics of individualized instructional media:
   a) Individual learner interacts with the material at his own pace.
   b) The learner is made aware about the objectives.
   c) The learning material is presented in small steps.
   d) The learner is expected to be actively engaged in the process of learning.
   e) At every step, feedback is provided to the learner about his progress.
3. i) Advantages of Flannel board:
   a) Low cost
   b) Easy to prepare
   c) Offers flexibility to the user
   d) Colourful pictures/cards/photographs catch attention of the students.

   ii) True statements: a), d), e)

4. i) True statement: a)

5. i) 1) - c), 2) - e), 3) - b), 4) - d)
   ii) e)

### 17.12 SUGGESTED READINGS


### GLOSSARY

**Components** — The set of activities of a teaching skill.

**Desirable teacher behaviour** — There are some behaviour the teacher must follow while teaching in class.

**Undesirable teacher behaviour** — There are some behaviours the teacher must avoid during teaching.

**Explaining links** — The words and phrases which join the two clauses or sentences to give cause and effect relationship in the explaining skill.

**Feedback** — A process of providing information to an individual concerning the correctness of his behaviour of performance in order to modify it in the desired direction.

**Focussing** — Pointing the attention - (Verbal, gestural, verbal gestural).

**Gestures** — Movements of head, hands, body to direct attention, to emphasise importance, to express emotion, indicate shape, size, movements.

**Interaction style** — Shifting the action from one to another as change in interaction - teacher group, teacher-pupil, pupil-pupil.

**Movements** — Moving from one place to another which seem to encourage useful shifts for attention.

**Negative verbal reinforcement** — Includes telling the student directly that his answer is wrong.

**Negative non-verbal reinforcement** — Showing non-acceptance for wrong answer - frowning, starting, looking, angrily to the responding student.

**Positive verbal reinforcement** — Includes positive verbal reinforcer (words): Yes, excellent, carry on, etc.

**Positive non-verbal reinforcement** — Non-verbal reinforcers like, modding, smiling, looking attentively.

**Pausing** — A short deliberate intervals of silence.

**Skill** — Skill is a set of behaviours aiming at specific objectives which can be practised individually.