

VISUAL INSTRUCTIONAL DEVICES

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Introduction:

The idea of visual education is not new. It appears that over long centuries outstanding teachers have tried to devise ways to make concepts clearer to their pupils through the use of various devices. It is said that 2500 years ago the Greek mathematician Pythagoras drew geometric figures in the sand when making his demonstrations. History suggests that the basic condition which strongly encourages study and experimentation in visual aids was one which was the danger of what William James called it "Empty Verbalism" concepts; to have meaning for the learners must be grounded in his personal experience. Many students

of Educational method are convinced that the most serious problem of all formal teaching from Kindergarten through college is the avoidance of meaningless verbalisation. The avoidance of excessive verbalism was a basic consideration in the pedagogical theories of Johann Amos Comenius (1592-1670). Comenius was greatly disturbed by the prevailing methods and materials of instruction in use in his day. He was convinced that improvement in Teaching and learning would necessitate more emphasis on sense experience, in order that the formal teaching would be grounded in the experience of children and would thus be meaningful to them. This conviction led him to prepare one of the most famous text book ever written for children, ORBIS PICTUS (meaning the world in pictures). This book contained numerous pictures of scenes from everyday life of the times accompanied by textual material for children to read. In his book Comenius gave the following directions to the teachers and parents who were to use the materials with children.

Nearly two centuries, Pestalozzi was struggling with ways to remedy the undue emphasis on mere verbalism and to ground the instruction of children in sense experience. The Pestalozzian "Object Lesson" become very famous throughout Europe. This technique of Teaching involved the use of many pictures, drawings, concrete objects and manipulative materials. Pestalozzi was convinced that basing formal teaching on sense experience was not only important from the stand point of teaching methodology, but also was necessary for the progress of society.

According to Dr. Marshall McLuhan, whose books – The Gutenberg Galaxy and Understanding Media throw some light on the subject of media of communications; it is the medium which is the message. This means that the medium by which a piece of information or knowledge is communicated to us, has a profound influence on us. The medium is of greater importance, because the same piece of information when conveyed on a printed page, or over the telephone, by radio, slides or television will appear different and have entirely different effect on us. Hence, the effectiveness of a piece of information depends upon the medium through which it is imparted. Electronics, according to Dr. McLuhan, affect the sensibility greatly because they tend to massage the senses. Thus, the medium is not only the message but the MASSAGE, because it massages the sensory organs and stimulates them to respond actively. Hence, it is important that these media be utilised in classroom teaching, rather than be ignored so that the pupils may obtain sensory stimulation as part of the process of instruction, the same kind of stimulation that is provided by movies, radio and song-hits outside.

In order to achieve the purpose, the Teacher like other craftsmen has to use certain Tricks of Trades commonly styled as "Devices or Aids of Teaching". These devices are the external modes or forms which teaching may take from time to time.

An outstanding development in modern education is the increased use of supplementary devices by which the teacher through the use of more than one sensory channels helps to clarify, establish and correlate accuracy, concepts, interpretations and appreciations; increased knowledge, rouses interest and even evokes worthy emotions and enriches the imagination of children. Our senses are the gateways to acquire knowledge. The natural way of learning by children is principally through the employment of senses. These senses are the receptive mechanisms which feed us the necessary data, the sensory impressions. There is an old saying which reads: "I hear, I forget, I see, I remember, I do, I understand".

Non projected Aids are Visual instructional devices which are simply presented without any projection equipment Non-projected Aids can be classified

- a) Graphic Aids, b) Display Boards and c). Three- Dimensional Aids.

1. Graphic Aids:

Graphics are visual elements often used to point readers and viewers to particular information. They are also used to supplement text in an effort to aid readers in their understanding of a particular concept or make the concept more clear or interesting. Graphic aids are represented on plane surface. Graphics could be truly considered as the short – hand language of the idea present. Graphics are two-dimensional. Almost any material involving illustrations is basically graphic in nature. The principal categories of graphic aids are described below:

i. Diagrams:

A diagram is a symbolic representation of information using visualization techniques. Diagrams could be used to explain facts easily using a variety of symbols and labels. They are considered as brief Visual synopses of facts to be presented. Diagrams can explain facts more easily. Technical fields like engineering rely heavily on diagrams to communicate, detailed, precise information (or Blueprint). Diagrams can be presented in two forms: they are:

- a) **Line Diagrams** – illustrate essentials without clouding the presentation with excessive detail. Line diagrams are used frequently to illustrate principles.
- b) **Block Diagrams** – may be used to present mechanisms or processes schematically rather than the actual objects.

ii. Charts:

It is a combination of pictorial, graphic, numerical or verbal material which presents a clear visual summary of facts, information and ideas. It uses graphic or pictures, etc., to represent a large mass of data or to show the progression. It may be related to individual as an institution, an object or incident, an idea or ideas which are represented for easy reference. The most commonly used types of charts are:

- a) **Flip Charts:** It is a series of charts containing visual information about the same area of knowledge. It is arranged one above the other in the proper series and shown. Lesson content or key information is written or displayed on the sheets either before the lesson or as the lesson proceeds. When each sheet has served its purpose it may be flipped over the top of the easel revealing the neat blank sheet or prepared set of notes.
- b) **Flow Chart:** Flow charts are used to present organisational element and their functional relationship between the different aspects or parts of the unit, process, etc. It contains information about a practical area e.g. a government, manufacturing process, etc. Flow chart can be used when there is continuity and a chain of events and sequences. Lines showing the directional flow connect the time by rectangles, circles or other graphic representation in the chart along with a sense of order and sequence.
- c) **Diagrammatic Chart:** Diagrammatic chart represents facts and events with the help of visual symbols which convey a number of things within a short space and time. They help to present data or information to the pupils. In a diagrammatic chart we usually present technical data that are artistically presented and appealing to the aesthetic sense of the pupils.
- d) **Tabulation Chart:** Tabulation chart or Table chart represents data in a Tabular form and helps to gain a comprehensive view of the facts at a sight. It facilitates comparison and contrast between different phenomena. Here the information (data) is analysed under several heads or sub heads. This type of representation relies more on language than upon symbols.
- e) **Pictorial Chart:** Pictorial Chart expresses an idea or a concept with the help of picture symbols which are self explanatory appropriate. Pictures consist of the following:
- i. *Descriptive Pictures:* That contains facts and information which intend to give meaning to unfamiliar words.
 - ii. *Action Pictures:* contain people doing things or machines working and are used to encourage thought and enquiry.
 - iii. *Emotive Pictures:* appeal to the emotions and are used where people are required to discuss their teachings about the subject of the picture.
- f) **Wall Chart:** These are large charts. They contain much information in one go. Wording and other detail is relatively small. The content often summarises a specific topic and the chart is best used as a reinforcer. The chart should be displayed in a workrooms, laboratory or well-lit passage where it can be seen.
- g) **Chronology or Time Chart:** These charts provide a chronological framework within which events and development may be recorded. They develop time-sense among the pupils, helping them to comprehend and visualise the pageant of time and its relationships. The relationship between different aspects for e.g. political development, cultural development, religions, etc., can be shown in a chronological chart.

- h) **Flash Cards:** The cards contain written documents printed in bold letters or pictures. In this technique, a chart is flashed and the pupils cast a glance on them and comprehend the idea represented therein. This technique introduces a dramatic element in teaching and captivates the attention of the pupils. They are small compact cards made out of any thick materials. They are used to present an idea in the form of postures, pictures, words and sentences. They develop in students the power of observation, identification, quick comprehension and retention.
- i) **Time Lines:** Time line gives linear representation of time. Time is the most abstract concept in any subject. Time line helps the pupils to gain time sense with the help of space symbols. An event happens at a particular time and at particular place. We are interested to know its exact location on the long and unending line of time. We are interested to know how long it took an event to happen. Thus, *location, distance and duration* are the three *space symbols* which represent time. In a time line, the length of time is symbolically represented by a line drawn horizontally or vertically. It gives a visual image of the sequence of event and their relative differences in their occurrence in time. It also helps us in comparing and contrasting and showing mutual relationship between event and happening at different places but at the same time. Time line can be of different kinds:
- i. **Progressive and Regressive Time Line** – progressive time line present the happenings in a chronological sequences on a horizontal or vertical line. In progressive time line, the sequences of happenings march from the past to the present, as the happenings have actually occurred in time. In regressive time lines, the sequences of happenings march from the present to the past, as if we are moving backward.
 - ii. **Pictorial time line** – time lines can be made pictorial to make them attractive. The events, personalities to be located on the time line may be presented through picture symbols. Picture time lines are more useful in lower classes and in exhibition.
 - iii. **Comparative Time Line** – such time line are of great use, particularly in higher classes. In such type of time lines, events happening in different countries are placed side by side, so that one may be compared with the other. Comparative time lines are also useful when the happenings or events have a bearing or happening on others.
- iii. **Posters:**
It is a bold basic representation in striking colours of an idea or concept in an attractive form. A poster catches the eye and makes the viewer go through the message conveyed. The visual design is dramatic and hence dynamic in appeal. But they can also give symbolic expression to the ideas concerned. Posters throw lights on many aspects of human history. In other words posters are graphic aids with short, quick and typical message as shown in the figure below:
- iv. **Illustration:**
It may be hand drawn, photo-graphic reproduction which are self – explanatory. Good illustrations have good picture quality, good composition and should communicate the idea clearly. They are complete by themselves and do not require any lengthy explanation.
- v. **Maps:**
Maps are the universally accepted symbols which represent historical reality in space. They show the location, distance and direction of places. They give information about the distribution of land, water, vegetable life, climates, economic resources which have directly or indirectly shaped the destiny of man. They help to visualise realities and supplements their oral and written accounts. A Map is an accurate representation on a plane surface in the form of a diagram drawn to scale the details of boundaries of continents and countries, etc. Geographical details like location of mountains, rivers, altitude of a place, contours of the earth surface and important locations can also be presented accurately with reference to a convenient scale with suitable colour scheme. Maps are of different kinds.
- a) **Flat Maps:** Flat maps of different kinds for instance, Political, physical, population, economics, rainfall, temperature, soil and vegetation, roads and the like can be very useful. These type of maps are various and can be called as *distribution maps*. Flat maps showing physical features, political division, population, rainfall, temperature and communication of the world and other countries provide ample opportunities for illustration. In the same way larger charts and other kind of maps are useful in giving a clear picture of historical, social, economic phenomena.
 - b) **Relief Maps:** They may be considered as a model of the geographical features of a place. They are used where geographical features have a direct influence on the course of events. They are useful in showing the depression and elevation on the surface of the earth which has influenced the course of history or geography or economy, or the like. Invasion, military operation, migration of the people and social intercourse all bear the impact of the inequalities in the surface of the earth.

- c) **Geographical Map:** A geographical map is one that represents the localisable geographical phenomena in space such as the rivers, the deserts, the mountains and plateaus.
- d) **Contour Map:** Contour map is a topographic map, on which the shape of the land surface is shown by contour lines.
- e) **Historical Maps:** Map in history reveals the changing times, the growth and decline of various kingdoms of man's life; knowledge of lines of boundaries and other symbols is necessary. Every history maps shall contain some important relief aspects also.
- f) **Sketch Maps:** Sketch maps are maps in outline. These maps are very useful whenever we are to deal with the course of action.

vi. **Atlas**

A collection of maps bound together in the form of a book is called an Atlas. An atlas is more useful than a wall map because it is easy for reference. An atlas is visible in a better way than a map. Atlas is of two types:

- a) *A Historical Atlas* contains maps of places of historical importance
- b) *A Geographical Atlas* contains maps of places of geographical importance

2. Display Boards:

- i. **Chalk Board-** is one of the most valuable devices for making teaching concrete and understandable. The chalk board offers many educational opportunities in connection with the presentation of facts, principles, processes, etc. It is a mirror through which students visualise all about the teacher's mind, his way of experiencing, illustrating, teaching as a whole. It is a necessary equipment of a classroom and a handy apparatus at the hands a teacher. When it is used properly it can set standards of neatness accuracy and speed. An Illustration drawn on the black board during the lesson can restore the attention of the class. Many vague statements can be made clear by using the chalk board for sketches, outlines, diagrams, directions and summaries. The chalk board used as occasion demands through-out a lesson enables children to see what they have heard. This can connect the aural and visual sensation.

ii. **Bulletin Board:**

The Bulletin board is one of the audio-visual aids of great educational value. It can serve as a perpetual magazine of the class or the school designed to give the pupils information of direct concern to them and tap their curiosity and desire for knowledge. It can provide a suitable place for the display of all kinds of creative work of students. It can serve as a place for the display of photographs, interesting news, pictures and news stories, cartoons, newspaper and magazine clippings small samples of products in connection with specific lesson or topics of current interest, even jokes for variety. If made a centre of attraction, it can provide a suitable place for the posting of announcements, assignments, distinctions and achievements. It provides the best opportunities to children to work as a group. The classroom atmosphere gains a new momentum through this board.

iii. **Flannel Board or Felt Board:**

The flannel board or the felt board is of recent origin. It is a valuable aid in many learning situations. The flannel board is a wooden or plywood board covered with flannel. The items to be displayed e.g. pictures, drawings, etc., should have flannel or sand paper pasted on the reverse side.

iv. **Magnetic board**

A magnetic display will be useful to show the relative movement of elements of a visual. A sheet of iron together with a piece of magnet can be used for the magnetic board.

v. **Marker board:**

This is a large sheet of white board with a surface texture suitable for writing or drawing with felt- tip pens, marker or crayons. This can be used in a same way as chalk board.

3. Three – Dimensional aids:

i. **Models:**

A Model means an imitation, a replica or a copy of a thing, act or process. It is a three- dimensional aid with desired flexibility, size, complexity, safety and cost for effectively achieving instructional objectives. Models are the actual representation of the real objects. The original size or shape of the actual things is changed i.e. enlarge or reduced to suit the learning group. That is why, models are more advantageous and more convenient than actual objects or process. For example, a fly is so small in size in actual condition that it cannot be used as an aid in the classroom, but an enlarged model of a fly can be easily shown its structure and various organs as well. Similarly, a process or phenomenon actually in operation cannot be explained to students, but models of the same can be effective aids in explaining the details of their functioning. For instance, we cannot take students inside the mines to show the actual functioning of the mining system. But it can be explained very well through models.

There are 3 main types of models:

- a) **Solid Models** – which are used generally for recognising external features.
- b) **Cross- Section Models** – which show internal structure like heart, brain, etc. These types of models are cutaway models that enable viewers to look into the inner design and structure of a system.
- c) **Working Models** – Which demonstrate functions or processes namely a machine, gear box etc. These models are designed to show students how an organ or a process works.

ii. **Diorama:**

A diorama is a three dimensional scene in depth, incorporating a group of model objects & figures in a natural settings. Diorama scene is set up on a small stage with a group of modelled objects that are kept on the foreground and blended into a painted realistic background. Diorama is very effective in the teaching of all subjects' especially social & biological science

iii. **Specimen**

A specimen may be defined as a typical object or a part of an object, which has been removed for convenient observation. It may a representative of class or group of similar objects.

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