## COMPULSORY COURSE 04 (CC-04)

# TECHNOLOGY OF TEACHING

# BLOCK 05

# INSTRUCTIONAL AIDS

## B.Ed. CC-04 : TECHNOLOGY OF TEACHING

# Block 5

# INSTRUCTIONAL AIDS

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# BLOCK 05 : INSTRUCTIONAL AIDS

## INTRODUCTION

In order to bring an effective learning and also to help the students to learn in a smooth and easy going way, a teacher uses suitable, apt, supportive materials, what are collectively called Instructional Aids. So, this Bolck focusses on some of the instructional aids that facilitate a teaching-learning process. In **Unit 25** of this Block, a detailed infromation is given about Text Book; this will be followed by **Unit 26,** where you come across the information with reference to work books, charts, models, specimens, maps and globes. **Unit 28 and 29** deal with improvised aids and the last two units, namely 28 and 29 deal with technology dependent instructional aids and computers as instructional aids respectively.

# UNIT - 25 ❐ TEXTBOOK AS AN INSTRUCTIONAL AID

## Structure



## 25.1 Introduction

You know that, every teacher wants to give a very effective learning situation to the students. Therefore apart from just presenting or imparting the information orally, a teacher goes in search of other resources and aids that facilitate learning. In this context, the 'textbook' takes up a very conspicuous role. Though the textbook does not reflect the whole curricular programme, it is considered as almost an inevitable and integral part. A teacher may feel that, he or she is incapable of teaching in the absence of textbook. It is true that, in most of the time, the textbook serves as a guide to the syllabus or becomes the syllabus. Other supplementary reading books, periodicals, newspapers, science journals, work books, laboratory manuals, teacher's guide, etc., also facilitate the teaching - learning process. In this particular block, you will come to know about the prominent Instructional Aids.

Usually, in any education system, the objectives will be constructed at the first step. These objectives will be the means to achieve the broader educational goals and aims. Based on the objectives, curriculum will be designed and this will be followed by syllabus construction. Syllabus gives the whole curricular idea in a brief and precise language. Most of the time, the syllabus is equated with a telegraphic message! Whatever

that is told in the syllabus in terms of broken sentences will get the relevant expanded form in a textbook. Let us concentrate on the meaning, nature, importance, characteristics and advantages of a textbook.

## 25.2 Objectives

After studying this Unit, you will be able to:

- Explain the meaning of a textbook
- Understand the importance of a textbook
- Identify the characteristics of a textbook
- Learn the uses of a textbook.

## 25.3 Textbook

A textbook is considered as a synonym to syllabus. In any school system, you will come across three to four types of textbooks. That is to say, all the languages - whether it is first language, second language or third language will have their own specific textbooks. The students are supposed to study three languages through the three respective textbooks. Similarly science textbook and social science textbook are also there. They could be printed in any medium i.e language according to the requirements of studies. So, totally there will be the respective textbooks for three languages and three core subjects at the school level.

The textbook practically describes what should be taught. Therefore, while prescribing, writing, and selecting a textbook one must be highly cautious. The textbooks are used chiefly as a source of information, a course of study, a set of unit plans and a learning guide as well.

### 25.3.1 Meaning and Importance

Though textbooks are inevitable to teachers now-a-days it is extremely important on their part to think about the general problems of the textbook, its functions, characteristics and the methods of using it.

The present-day textbook is usually divided into sections which are again sub-divided into chapters. Hence, it is perceived that a textbook is a course of study which may be used in its entirety. A textbook invariably begins with an introductory section, which sets the stage for the whole year’s programme. The chapters are arranged

sequentially with a natural continuity of information and give a solid structure for the classroom academic activity. Along with the printed information, you could see the photographs and drawings. Each chapters may have several suggestions for supplementary activities, like, experiments, demonstrations, readings, long term activities, and short term activities etc;

Few textbooks, supplement the information with materials in boxes, or with footnotes. The boxes may also contain biographical sketches of scientists or of some of historians or of some great personalities. Sometimes, you may come across a section on glossary. Usually a textbook provides a provision for self evaluation. Anyhow, textbooks tend to be general and comprehensive. They are written for nationwide sale and therefore deal only with topics of national interest.

All these points explain the meaning and nature of a textbook in general. Now let its try to focus on the importance of a textbook. The main function of a textbook is to provide the body of knowledge. It is hence a strong teaching-learning bond between the teacher and the taught.

As it is already pointed out, it is an extended form of the prescribed syllabi. That is to say, it is a verbal explanation of the highly abbreviated syllabus. It is a very good and sound basis for the teacher to generate several learning activities. Through chapter-end exercises, it gives a scope for self-evaluation to a learner as well as to a teacher.

**‘Check Your Progress’-1**

Fill in the Blanks

1. The textbook, most of the time plays the role of ……. ( Notes, teacher, syllabus, student)
2. The textbook is one of the .....(instructional aids, books, printed materials, written documents)
3. A textbook contains .....at the end of each chapter.

   (Self evaluator questions, pictures, photographs, graphs)

### 25.3.2 Characteristics of Textbook

Now, if you ask a question to yourself, like “what types of textbook you want?”, then you will list out all the good characteristics of a textbook. Isn’t it? So, come on, now, let us do the same task. The characteristics of a good textbook are as follows:

- Textbooks are always in accordance with the aims and objectives of educational system.

- Textbooks provide a scope for the development of certain skills. Their skills may vary with the subjects, like, languages and the core subjects, namely, science, social science and mathematics.
- The textbook should have good external internal features also. External features (also known as the mechanical features are nothing but, get up, the quality of the paper, the printing, photographs, graphs, binding, background sets, etc; - All these should be attractive and mind catching.
- ***Internal features*** are, like, the standard and the method of treatment and presentation of the subject matter, clarity in the language used, accuracy of the facts, concepts and principles mentioned, the quality of the supportive diagrams etc.
- The subject matter should be presented in a psychological sequence. It has to catch the attention of the students, develop interest among them.
- The information within the textbook should reflect the essential criteria, namely, consistency, reality, etc., It should stand as a device to inculcate certain values, like, open mindedness, scientific attitudes, scientific method and disciplinary values.
- It should give a chance for the students to carry out certain projects or activities by good suggestions, so that pupils can understand the subject matter in a better way.
- Each chapter should begin with a brief introduction and end with a fitting summary.
- Each chapter should contain assignments at the end of the chapter with a due scope for different level of learning, namely, knowledge, understanding, application and skill.
- All captions and sub-captions must be bold type. The matter should be presented suitably with a varied and distinctive form.
- Each textbook should be made up of three essential parts, namely

  i) Preliminary section

  ii) Chapter

  iii) Reference Section.

  Under preliminary section, it should give the details of sponsoring agency, government officer, publishers, authors, table of contents and figures. In chapter's section, the subject matter has to be printed according to the principles and maxims of the teaching. In the reference section, glossaries, appendixes must be present.
- The language used in the textbook must be lucid, simple and precise one. It should

be free from ambiguity, use of double negatives in a sentence etc;

- It should suggest quite a good number of learning activities. It should be in such a way that, it draws the social community resources and school -society interaction.
- Textbooks of different subjects must bring a strong and positive correlation among science, craft, social environment and physical environment.
- Each textbook should be accompanied by a teacher's hand book, work book and laboratory manuals. (for the science subject).
- The content should be appropriate for the age level and experience background of the pupils. The concepts should not be too complex for the maturity level of the pupils.
- The contents should be consistent with the general objectives, goals and aims of the respective curriculum.

  As far as the literary style and vocabulary is concerned, following points have to be taken care of by the author.

  a. Length of sentences

  b. Directness of sentences

  c. Number of ideas per sentence

  d. Continuity of thought.

- The text should have sufficient number of illustrations, clear photographs diagrams, like, they must be eye-catching.
- The activities at the end of each chapter are to be in such a way that it should meet the needs of the teacher and the taught.
- A textbook should help to reinforce learning that might have originated in the class room or laboratory or on the field trip or outside of school. Such reinforcement should come from self-study and assignment works.

In a nut shell, one can say that, a textbook should be assessed by means of its:

***1) Correctness of matter:*** The subject matter presented in the book must satisfy these criteria by means of accurate, correct, integrated information.

**2) *Language and communication*:** A textbook language must be simple, clear and lucid in preference. It is good, if the regional textbooks, give the English terminology within the brackets for certain technical terms.

**3)** ***Simplicity of Diagrams*****:** The diagrams presented in a textbook must be well labeled, with good proportion in size, so that; students can read the labels comfortably. Moreover, the diagrams and sketches must be self explanatory, with a bold *heading and relevant foot notes.*

***4)*** ***Quality of Printing and Binding*****:** The paper used to print the contents must be of a good quality. The binding must give a good get up to the text. The printing also should be appealing. The subject matter should be sequentially and psychologically arranged. Headlines and Sub-head lines should be discriminated by a proper 'font-size' and bold letters. It should contain a table of contents at the beginning and a subject - index at the end. If it is a science textbook, then glossary of some important scientific terms at the last part of a textbook is a must. So, a good text - book should satisfy at the above said points as far as possible.

**'Check Your Progress'- 2**

State whether the following statements are True / False:

1. One of the external features of a good textbook says that, it should have a very attractive get up.
2. The difficulty level of the subject matter in a textbook must be very high.
3. Textbooks help in the formation of goals and aims of a curriculum.
4. There is no need to critically analyse a textbook.
5. The textbooks should have clear explanation good illustrations, appropriate vocabulary and a good writing style.

### 25.3.3 Uses of a Textbook

If a textbook satisfies most of the criteria which are listed already, then, it will be very advantageous to both the teachers as well as the students. So, now let us list out the uses of a textbook.

- In most of the time, the textbook serves as a guide to the syllabus or constitutes the syllabus itself.
- It is also true that, a textbook enriches the syllabus, through suggested activities and suggested readings.
- The primary use of a textbook is that, it is used as one of the instructional aids in terms of reference, by the teacher as well as the students.

- It reinforces the learning that might have been occurred in the class room or the laboratory.
- Textbook, gives the ideas for home assignments, which could be effectively used by a teacher. The exercises at the end of the each chapter help for giving the drill work to the students.
- Since textbooks are developed with the common goals and objectives at the national level, thus they are the best devices in bringing national integrity.
- Textbooks facilitate individualized instruction.
- They are very cheap, economical and accessibility to the users.
- They encourage self-evaluation as well as self - directed activities.
- It will be the major source of information for the students to get prepared for the examination.
- A textbook knowingly or unknowingly, directly or indirectly keeps the school activities on a track
- Textbooks are the major source for developing 'reading - recitation techniques'. - Here, as the term itself is suggesting, the pupils read a section of the textbook and then recite their learning. But it should not be overdone.
- A teacher may delegate to a group of pupils, the responsibility for presenting a section of a textbook unit to their class mates. This is called "pupil presentations of textbook material".
- Reading assignments could be given to the students, based on the textbooks.
- Textbooks give quite a good number of illustrations. It also provides many photographs and diagrams, which could be used for extended discussion and for further applications.
- Textbooks are also used for summary and review; this is considered as one of the strongest uses of the textbook

.

**'Check Your Progress'-3**

1. The textbook must be assessed from two points of views, they are its

a) Pictures and diagrams

b) Printing and chapter end exercises

c) Table of contents and index

d) External or mechanical features and internal features

2. The instructional material which forms a strong bond between the teacher and the taught is

   a. Textbook

   b. Teacher's guide

   c. Work books

   d. None of the above.

3. A textbook must be

   a. Attention catchy

   b. Very light

   c. Loaded with information

   d Bulky enough

4. Write any two uses of textbooks.

## 25.4 Let Us Sum Up

Textbook is the most inevitable and integral part in teaching profession. It is considered as the most important instructional aid. It is an extended form of the whole syllabus of an academic year. A textbook will be constructed in ccordance with general aims, goals and objectives of a curriculum. Textbooks are there for three languages and for three core subjects namely, science, social science and mathematics at secondary school level. A textbook is the source of information, which throws light on what should be taught. There are certain criteria, based on which a textbook has to be selected. Usually textbook will be very general and tend to be comprehensive. Textbooks are written for a national curriculum. The textbook gives an opportunity for the development of certain skills, namely, communication skills through language textbooks, observation, hypothecation and problem solving skills through the science, social science and mathematics textbooks.

A typical textbook must satisfy the criteria of external or mechanical features as well as internal features. Outward get up, its binding, quality of the paper, colour - etc; constitute the external or mechanical features of a textbook. Similarly, the subject matter

presented inside the textbook, the accuracy, clarity, of the information, its consistency, clarity in sketches, and diagrams, lucid, simple, meaningful sentences etc; all these constitute the internal features.

To have a good textbook in an educational system is really advantageous as it is used in several ways. Most of the times it serves as a guide to the teacher, by enriching the syllabus. It makes a pupil to get prepared well for the examination. They are the best devices in bringing national integrity. Based on the textbook exercises a teacher can design several drill works as well as an array of home assignments.

## 25.5 Answer to 'Check Your Progress'

**'Check Your Progress' - 1**

1. Syllabus
2. Instructional aids
3. Self-evaluatory questions

**'Check Your Progress' - 2**

1. True
2. False
3. False
4. False
5. True

**'Check Your Progress' - 3**

1. d) External or mechanical features and internal features
2. a) Text book
3. a) Attention catchy
4. Write any two used from section 25.3.3

## 25.6 Unit-End Exercises

1. What is a textbook? Explain its meaning and importance.
2. Explain the need of a textbook

3. List out the characteristic features of a good textbook.

4. Mention the uses of a textbook.

## 25.7 Reference


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# UNIT - 26 ❐ OTHER INSTRUCTIONAL AIDS

## Structure



## 26.1 Introduction

A very enthusiastic teacher will always put sincere efforts to bring about qualitative learning among the students. For that many teaching strategies, tactics, skills are used. The strategies may include the teacher's role as well as some material's role. Since these materials help in the learning of the subjects that are imparted during teaching, they are called instructional aids. In the previous unit, you have come across one of the very important instructional aids, i.e. Textbook. In this unit, you will come to know about other instructional aids which facilitate the teaching learning session.

A child centered approach in any teaching situation, gives a pivotal place for the pupil's participation. It anticipates his learning to be the resultant of his personal experience. This is, what is known as first hand experience. But in certain cases, such learning is obviously not possible. Take, for example, a physics student cannot see what goes on inside a vacuum tube, or a biology student cannot sit patiently watching

bud while it opens or you cannot take the whole class near the Taj Mahal. In such situations, a teacher must use the substitutes for reality - like, photographs, drawings, models, recordings, CD's etc., Generally such substitutes are termed as audio - visual aids. It is because these learning aids capture the most important sense organs, eyes and ears. It is also true that they help in the learning of instructions or what is taught. Hence they are also grouped under the category what is known as instructional aid. The first and the foremost place occupied by the instructional aid, will be the textbook. This you have already learnt in the previous unit.

Next, the textbook has to be followed by teacher's guide, work books, laboratory manuals etc; as the integral parts in a curriculum. NCERT has taken a very strong step in this direction. The textbooks should be accompanied by work books. So, in this particular unit, we shall concentrate on work books which are followed by details regarding, charts, models, specimens, maps and globes - which are collectively called audio - visual aids. In all these cases, we shall go by their meaning, types, selection, preparation and usage.

## 26.2 Objectives

After studying this unit, you will be able to:

- Explain the meaning and nature of work book
- List out the characteristic features of a good chart
- Mention the criteria for the selection of models.
- Describe the procedures for the preparation of specimens
- Grasp the need for the use of maps and globes.
- Enumerate the general principles for the selection of instructional aids.

## 26.3 Work Book - Meaning, Types, Selection, Preparation and Usage

A work book is a printed device, which is produced as a supportive material for the already established textbook. This implies that, it exactly follows the textbook information. Most of the time a work book is used as an instrument for evaluation. At its best appearance, a work book can become an academic record, a summerisation of learning, an exercise in organisation, a medium for self - expression, an indication of

progress and a more dynamic book for giving chance of 'then and there' expression. Here the students have to read and write or respond on the concerned page itself. In this respect, a work book supplements the textbook. Though the students come across the questions, and exercises at the end of each chapter, they are not expected to write their answers on that same page. This criterion is fulfilled in a work book. Therefore a workbook supplements the respective textbook, but it is not a substitution to textbook.

By tradition, the chief function of a work book is evaluation. In a work book, the same sequential order of the chapters that are in textbook is maintained. So, you get equal number of chapters as it is in the textbook. In textbook you find exercises at the end of the chapter. But in a work book, the summary of the chapter will be given in the beginning. And this will be followed by questions with a provision for student's responses. But these questions are not the questions seen in the textbook; they are more than that. As far as possible, the questions will be distributed over different levels of learning, namely, knowledge, understanding, application and skills.

The work book is a readymade book for students' paper - pencil performance, it gives an opportunity to organise their learning. Usually, the questions will be objective based, and vary in types, namely, objective type, short answer type and one or two little bit long answer type questions. It may take the marks or weightage into consideration, and frame the questions as one mark, two marks, and four marks questions. Questions may test the students' ability to recall, recognition, observation, classification and identification skills. They may be asked to complete the sentences, diagrams or label the given figures etc. Under objective type questions, they may vary with multiple choice types, true or false type, fill up the blanks type, pick out the odd item etc;

With reference to types of work book, one can say that, language work books, science work books, mathematics and the social science work books are the possibilities. It is so said because, though the idea of a work book is good, you won't come across them much at the high schools that are run by the government. But in recent days, the state government is also putting its effort in bringing out work books. Certain private institutions also have initiated their efforts in this direction. As it is already told, NCERT, a national body produces the textbooks for central syllabus and this will be accompanied by the workbooks also.

There is no standardized design for a work book. Therefore they may vary greatly in content and organisation. For example, at one extreme, workbooks may reprint the pages of an associated textbooks, replacing key words with blanks that are to be filled in by pupils after reading their texts. But this type is not considered as a good one. On the other extreme, work books can give provisions for many different types of activities, like, forms for reporting data, diagrams to be labeled, blank spaces for ketches and

clippings, suggestions for supplementary work, study guides for reading assignments, and self-testing devices. Anyhow, work books are highly individualistic in their approach. This type of work books, will act as a good record or cumulative record rather, showing the student's level of performance unit by unit.

1. As a course of study it shows the pupil where he has been and where he is going;
2. As a study guide it gives him detailed instructions for his work;
3. As a record book it gives him a convenient depository for his findings.

As it is told already, the availability of work book is always under question. So, as a teacher, it is better if you know how to prepare the work book. If they are available, then you must be in a position to select the relevant, reliable, valid work book using the wise knowledge.

**How to Select a Work Book?**

- It must give an ample scope for students' drill work and exercises
- It must give the study outlines, adequate worksheets, laboratory directions, suggestions for all the activities.
- They must be in such a way that, it becomes an easy job for the teachers to evaluate the students' performance on a work.
- They must facilitate students' self-learning more effectively.
- It must be comprehensive, well organised, and free from ambiguity and demand an active participation by the students.
- The questions on each unit must cater to different instructional objectives, namely, knowledge, understanding, application and skills.
- It should be consistent with textbook information.

A teacher must not be overwhelmed by the advantages of a work book. While selecting, he or she must be aware of the limitations of the workbooks also. So, that, care can be taken so that, as far as possible the limitations in the chosen workbook is less.

The limitations are as follows:

- Workbooks are relatively inflexible, i.e. the content is highly organised and cannot be altered easily.

- There will be little or no provision for the inclusion of new materials. Workbooks insist on uniform outcomes.
- If the workbooks dominate any educational programme, pupils have little opportunity to develop special interests and talents.
- It does not give any chance for pupils' participation during its planning process.
- It does not provide any incentive to independent work, any practice in formulating their problems and any encouragement to do their own thinking.

***Preparation of a Work Book***

First identify the objectives, for these instructional objectives will help you. Then select the content. Let it be divided into simple, sequential, natural, smaller bit of information. Then pool out different types of question, like, objective type, short answer type and long answer type. Let it be exclusively a paper - pencil test type. You have to test the students' performance at knowledge level, understanding, application and skills level. Construct the work book with due directions and adequate space for student's performance. Remember, each chapter in the textbook will have the respective work book exercises in the work book.

***Usage:***

Usually work books are appreciated, because, heavily burdened teachers find the better workbooks are useful in conserving time and energy, it is because,

- If the workbooks are available means, teachers are free from the preparation of study outlines, worksheets, and laboratory directions.
- They are also free from devising so many review and drill exercises. That means to say, soon after the particular lessons and unit is over, simply the work books could be used for many purposes, including home assignments.
- Workbooks could be used as a standardized record, which will be very easy to check.
- Workbooks could be used as a very good frame of reference, to know exactly what to do next and can realize that whether the pupils have been given adequate directions are not.
- Workbooks can help the pupils working under self direction to study more effectively.

- They are also helpful for pupils who have missed time because of illness or from having left school temporarily due to several reasons.

**‘Check Your Progress’-1**

1. Audio – Visual Aids are also known as

   a) Materials

   b) Instructional Aids

   c) Machines

   d) Teacher’s role

2. Workbook follows the same order as it is in the

   a) Teachers’ guide

   b) Laboratory manuals

   c) Textbook

   d) Note book

3. A work book is a……....for the textbook

   a) Supportive material

   b) Supplementary material

   c) Complementary material

   d) All of the above

4. A work book helps for

   a) Teaching

   b) Learning

   c) Evaluation

   d) Keeping the records

5. A work book demands .....…….by students

   a) Paper- pencil performance

   b) Oral answers

c) Demonstrations

d) Experimentation

## 26.4 Charts - Meaning, Types, Selections, Preparation and Usage

Charts are visual aids, where the diagrams will have two dimensions, length and breadth. Hence these are called 2-D aids i.e., two-dimensional aids. Charts are standard equipments in any subjects, to be used in classrooms. They are the cheap and best, available teaching aids. They are very advantageous, handy and can be used meaningfully. They enhance the quality of teaching-learning session. Most of the charts contain diagram or a series of diagrams. It may contain the portraits of kings, pedigree tree, flowcharts etc; Science charts usually contain scientific diagrams, where as in case of the subject mathematics, you can locate graphs, pie-charts, charts showing geometrical figures. In subjects coming under social sciences, the charts may deal with some important points written boldly, connected by means of arrows, details of certain dynasty's chronological details etc.,

Charts are the devices of one-way communication when certain topics or concepts are to be taught regularly and they become more meaningful with diagrams. The charts are more economical, handy and also stimulating. For example, charts such as Periodic Table, the various systems of common plants and animals are studied in a science or biology class, the bacteria that cause disease, simple machines, certain flowcharts etc; are frequently used for several years. Charts could be purchased from companies, or it could be prepared also. Before knowing about the preparation of charts, let us try to locate or identify different types of charts.

***Types of Charts:*** You know that, a chart is a combination of pictorial, graphic, numerical or statistical information which presents a clear visual summary. The most commonly used types of charts include outline charts, tabular charts, flow charts and organisation charts. Charts may be of technical diagrams charts and process-diagrams chart also. Recently, flip charts and flow charts are also being frequently used.

Charts could also be classified in terms of arrangements and the kinds of ideas that they express. In this type of classification, there are five major types, each type has further classification. Now, let us take up then one by one to understand clearly. The five types of charts are,

1) The narrative charts 2) The tabulation chart 3) The cause and effect chart 4) The

chain chart and 5) The evolution chart

***The narrative chart:*** These charts include the facts and ideas arranged and expressed from left -to - right. For example

1. The events in a process, such as, soap making, plastination etc;
2. The information with reference to parliamentary activities, Election Procedure etc;
3. The information with reference to technological improvement over a period of time, like, developments in the field of computers and ITs improvement in transportation, communication etc;

***The Tabulation chart****:* It is a chart showing a left-to-right, top-to-bottom arrangements of facts and ideas for expression. For example

1. Numerical data for making comparisons
2. Lists of products, rivers, schools in a particular area, examination centres etc;

***The cause and effect chart****:* These include inter-related facts and information presented from left-to - right.

***For example:***

1. Relationship between entry behaviours and instructional objectives and evaluation.
2. Relationship between standard of living and, availability of natural resources, economic system, technological advancement etc;
3. Relationship between rights and responsibilities.

*4.* ***The Chain chart:*** These include a circular or a semicircular arrangement of facts and ideas. For example:

1. A pi-chart showing details of literates, illiterates, among men and women population.
2. Natural cycles, like, water cycle, oxygen cycle etc;

***The Evolution chart****:* Includes a left-to-right arrangement of facts and ideas for expressions. For example:

1. Evolution of man
2. Evolution of life on earth etc;

***Graphs****:* Graphs are flat pictures which employ, clots, lines or pictures to visualise numerical and statistical data. Graphs are of several types, namely, line graph, bar

graph and circle graph etc;

***Line Graph****:* Here the data is represented with the help of simple lines horizontally or vertically drawn.

***Bar Graph:*** A bar graph consists of bars arranged, horizontally or vertically from a 'Zero' base. The colour, length and size of the bats represent different variables and values.

***Circle Graph:*** It is also known as Pi- Graph. Here the data is represented in a circle; it may make use of different colours to represent different variables.

***Selection of Charts****:* Charts however may be good but cannot replace a teacher. Only thing is, charts are used to enhance the quality of teaching-learning process. Charts are advantageous, but they are not free from limitations. So, while selecting the charts, a teacher must choose the charts which have less limitation. So, how to select a chart? Let its see the following points.

1. Charts should always be large for general class use.
2. All lines should be distinct and the printing should be readable from all parts of the classroom.
3. Charts must have employed proper, colour background, bold letters with contrast color so that it will be eye catching.
4. Too much colourful charts will be a negative point, it leads' to eye strain and confusion. Non-functional colour applied for decorative effects, should be avoided.
5. Each chart should be simple and uncluttered with adequate space between separate items.
6. They should contain only the essential details, with proper headings and footings, and correctly labeled diagrams.
7. A chart should be self explanatory with better clarity.
8. A chart should not contain too many details.
9. The teacher should make sure that there is a provision for hanging the chart
10. A proper care must be given in conserving and preserving the charts.

***Preparation of Charts:*** Sometimes teachers feel that, to get a relevant chart for a particular concept is highly difficult. It is because, all types of charts to suit all types of concepts. Then comes the need for the preparation of charts. Anyhow, chart making is

an excellent project for pupils! They may do it, carry out either as a service to the teacher or as part of presentations which they themselves plan to make.

For temporary use, charts may be made by using a sketch pen on large sheets of wrapping paper or drawing sheets. But these charts are not very durable and are easily damaged during storage.

Permanent charts are made on special chart cloth. Outlines are drawn in pencil traced in India Ink with a ball - tipped pen, a drafting pen, or sketch pen. Coloured lines, labels and arrows may be added with coloured drawing inks. Coloured areas may be filled in with wax crayons, after which the wax is blended in by applying a warm iron to the reverse side.

An opaque projector is of great help in laying out a chart. The chart cloth is tacked to a bulletin board in a darkened room. A diagram from a book or a clipping is put in the projector and focused on the cloth. By moving the projector to and fro, the size of the image can be varied until it fills the desired space. The outlines are traced in pencil and can be inked later.

**Usage of Charts:**

Charts could be used for the following purposes:

- To show relationship by means of facts, figures and statistics for a good explanation with clarity
- To summarize the information
- To give the concrete ideas for certain abstract concepts while teaching to motivate the students
- To develop, sustain and maintain interest throughout the teaching-learning session as a stimulus variation.
- Charts are the cheap and best attention compellers; hence a teacher should use them as support materials while teaching.
- A teacher must use the relevant charts with due consideration to the medium of instruction. For example, while teaching in a Bengali medium class, the charts with English labeling must not be used and vice-versa, is also must not.

**‘Check Your Progress’-2**

1. Charts are …….. aids

a) Audio b) Audio-visual c) Visual d) Projected

2. Charts do …….. communication

   a) One-way b) Two-way c) No d) Both a & b

3. Charts are used to give clarity for

   a) Concrete ideas b) abstract ideas c) easy ideas d) visual ideas

4. Mention the different types of chart

5. List out any four criteria for the selection of a chart

6. Mention any two uses of charts

## 26.5 Models - Meaning, Types, Selection, Preparation and Usage

Models are substitutes of real things and it is a three-dimensional representation of the real thing. Hence they will be concrete in appearance. Through its concrete appearance, a model helps in clear understanding of structure or functions of a real thing. It is also said that, a model is the replica of original things. It is the miniature of the original one, for gigantic original things. Practically to take all the students near a big industry, or any historical monument (Say Taj Mahal) is impossible. In such situations, models will fulfill the learner's need.

Models of specimens, steam engines, gasoline engines, a cross section of a leaf,

and the parts of al flower, an atom etc; are the replicas of the original ones. They will be exactly similar to the real objects except for size.

Sometimes, it so happens that, models are considerably larger than the real objects (for example, model of a human eye) and sometimes they will be small replicas of objects which are too large to be seen as a whole, (for example, model of an Airplane). In many cases working models of the original are used where the specific action of the original is duplicated and could be explained easily. In such cased, models have proved that, they are more effective than the reality.

***Types of Models:*** Models fall into different classification. Basically, there are two types, namely working models and still (static) models. They can be classified as scale models, diagrammatic models, display models and operating models also.

a) Working models and static models

b) Scale models: enlarged and reduced scale models

c) Diagrammatic models: emphasizing selected features and suppressing others for the sake of clarity.

d) Operating models: Show the action of moving parts.

***Selection of Models*:** A teacher has to select the models based certain criteria. For example, first of all a model must be of adequate size to be seen clearly from all parts of a room.

- For individualized works, you better go for smaller models.
- A model must be three dimensional, excepting certain cross sectional models.
- The value of a model lies in its presentation of the parts in their proper spatial relationships.
- One of the very important criteria is, the degree to which a model resembles the real object, that too, to what extent
- Models should not be over simplified
- You should consider in priority, the subject to be taught, model to be used and age level as well as maturity level of the learners.
- A model should not be made of fragile material.
- A working model will secure immediate attention and will serve as motivation. Thus, interest stimulated could be utilized to fullest advantage.

- Models should be used only if it is not possible to get real objects to the class room or when the real objects would not be helpful to give a better explanation.

***Preparation of Models:*** Preparation of models could from a topic for project work. This activity will really fascinate the students. For this a teacher has to provide an opportunity as well as suitable guidance to them. Ask them to prepare a simple paper or clay or plastinated models in the beginning then, later to prepare the sophisticated working models. Model making, gives a very rich learning experience to the students. Models which can be dissembled and assembled by pupils have enormous learning value.

***Materials for Preparation of Models***: Models could be made up of plaster of paris, wood, metal, or cardboard and plastic also. So, depending upon this, the list of materials required will vary. Therefore, let us make a list of the respective requirements.

***Cardboard Models:*** Cardboard of suitable thickness can easily be cut, desired shape could be formed, pasted and given a better look by coloured paper.

***Plastic Models****:* Clay, bees wax and plasticence (available in several colours) could be moulded easily to desired shape and models prepared.

***Easily Workable Materials:*** Thermocole could be easily cut with hot wire, bound together with fevicol, finished with sand paper and coloured with water colours using brush.

***Plaster of Paris:*** Duplicate copies of objects with plaster of paris could be made easily.

***Wood:*** Models could be made with wood -hardwood, light wood and easily workable also wood.

***Metal:*** Most working models require metal - in the form of sheets, rods, tubes, angles, wires etc; and of course necessary tools for fabrication are required.

***Thermocole Models****:* Thermocole is available in half sq. mt. sheets. Thermocole could be easily cut with a knife or an electrically heated wire. A surface finish could be affected using sand paper.

Modeling clay has several uses in the biological sciences. Plaster of Paris is a versatile material. It gives sharp castings; it may be drilled, sawed and sanded; it may be tinted and painted. It may be used for casting animal tracks found in mud.

***Use of Models:*** Models are three dimensional; hence they give more clarity during

explanation when compared to charts. Following are some of purposes in which models serve as the best devices.

- Models evoke greater interest and help in enhancing the learning.
- Models concretise abstract concepts. They simplify complex objects and accentuate important features with colour and texture.
- Models are handy, and are of compact dimensions so that they can be used in the class room teaching. It is possible to reduce or enlarge the objects to an observable size.
- Practically, it is not possible to see the whole of a large industrial unit or even a large machine unit, but if a small scale model is used, it gives the correct concept for the students.
- A large process could be easily demonstrated by a model as it provides interior views of objects and machines.

**‘Check Your Progress’-3**

1. Models are …… devices

   a) Uni - dimensional

   b) Two-dimensional

   c) Three - dimensional

   d) Four-dimensional

2. Basically models are of two types, namely, Static models and

   a) Working models

   b) Three dimensional

   c) Still models

   d) None of the above

3. Models …….abstract concepts

   a) Complicate

   b) Concretise

   c) Duplicate

   d) None of the above

4. State whether the following statements are true or false

   a) Models evoke interest and enhance effective learning.

   b) Models are too large to be carried out

   c) It is possible to reduce or enlarge the objects to an observable size.

   d) Models should not be made of fragile material

   e) The value of a model lies in its presentation of the parts in their proper combination.

5. Mention the types of models.

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6. Write any two criteria for the selection of a model.

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## 26.6 Specimens - Meaning, Types, Selection, Preparation, Usage

Certain subjects are more problematic while teaching, so that, unless and until, some of the live examples are provided, the concepts cannot be understood properly. Biology is one among such subjects. Most of the time, it includes the study of weeds, insects, rodents, birds, fur-bearing animals, trees, shrubs, plant and animal diseases. When a teacher realized that, there is-a need to preserve certain organisms for multiple times of usage while teaching, then the need of a special technique in preserving them as live or dead, also arose. In such situations, an enthusiastic life science teacher, goes for collection of live organisms which could be utilised for illustrations during explanation. For example while explaining the concept of “adaptations in xerophytes”, a cactus plant is used. Similarly while explaining external features of birds or fish in general, live animals could be used. Isn’t it? The use of live organisms for illustrations is called specimens.

**What is a Specimen?**

A specimen is an individual or part of an organism (plant or animal) taken as an example to illustrate the teaching points. Usually the live organisms are preferred. But this is not possible for all the times for all types of illustrations. In such cases dead plants and animals either as a whole or part which are preserved scientifically are used. These types of specimens are called preserved specimens. Now let us try to understand what are the different types of specimens and where are they used, and also a few procedures of preserving specimens.

Specimens are very special type of instructional aids that are made up of dead or alive individual part of plants and animals maintained and preserved scientifically. These are real objects and hence give three - dimensional effect, and concretise the abstract concepts. Because of this the learning process becomes easier and smooth going.

**Types of Specimens:**

Specimens are basically of two types, namely microscopic and macroscopic. Microscopic specimens are so small that they cannot be seen by naked eye for examples Algae, Volvox, Protozoa, Bacteria etc. Macroscopic specimens are big enough to be seen by naked eye. For microscopic specimens a compound microscope must be used for observation. In both microscopic and macroscopic specimens, we come across, live and dead organisms. They could be plants, animals and micro - organisms. Specimens are also of bottle specimens type. Here usually, the dead plants and animals either as a whole or a part of it are preserved in the medium of formalin solution. Such specimens are called **Bottle Specimens.**

Sometimes, the organisms, after killing are dried and preserved. Such specimens are known as ***Dry-specimens***. In case of plants, certain parts like, fruits, inflorescence, special type of leaves or modified parts are preserved. In case of animals, usually, molluscs and echinoderms are preserved as ***dry specimens***. Invertebrate animals, their hard bones are preserved as dry-specimens. In case of plants, herbarium preservation is employed. It is also an example for dry -specimens.

**Selection of Specimens:**

- Whenever the live, specimens are available preferably these have to be selected. But it has to be checked with facts, like, ease of handing them, dangers involved while handling etc;

- As far as possible select the specimens of such type, where children can learn by seeing it clearly, touching it and feeling it.
- If possible go for multiple number of specimens, so that, it becomes possible for you to give individualized instruction.
- While selecting the specimens, it is advised to follow a hierarchy, like, live specimens first and preserved specimens second. In preserved specimens, it can be formalin preservation, dry preservation and herbaria.
- Specimens are the best supporting materials, provided they are selected with proper relevance with subject matter to be taught.
- As far as possible, select the relevant specimens which are available abundantly in their natural habitat. Then, you can involve all the students very actively in identifying, locating, classifying, observing, comparing and also preserving the specimens in their natural habitat.

***Preparation of Specimens:*** There are several methods of collecting, culturing and preserving which are quite useful and may be known to you. Here are some selected procedures which are intended to be suggestive rather than comprehensive.

***A. Preserving specimens in wax:***

***Materials Required****:* Coffee can, sealing wax, newspaper, pair of pliers and leaf specimens.

***Procedure:*** Melt some wax in a coffee can. Group the petiole with pliers. Dip the leaf in melted wax and remove quickly to allow the wax to cool and harden. Colourful leaves can be preserved in this way so that they will retain colour also.

***B. Alizarine Preparation:*** (Embryo and small animals like fish)

***Materials Required****:* Alizarine red, alcohol, glycerine, specimen jar and KOH. Alizarine gives stain to the bones and makes the body tissue transparent.

***Procedure:*** Keep the embryo in 70% to 80% of alcohol and small animals i.e. fish, small lizards etc; in 90% alcohol for 24 hours. If the dehydration is not proper, it can be kept for 36 hours. Then change in 1 % solution of KOH, to be changed every day in the same concentration but with fresh solution till the muscles become transparent and bones are visible. This generally takes four to seven days depending upon the nature of the muscles in a particular animal. Now transfer the animal in Alizarine Red prepared in 90% alcohol or 4% Alizarine in 90%. Watch it carefully. If over-stained, wash it in pure glycerin. It can then be finally mounted under glycerin.

### *C. Preparation of Green Algae and Fungi Specimens:*

Take about 90 cc of 50% alcohol. Add to it 5cc of pure formalin (commercial formalin which is 40%). Shake the bottle properly, and then add 2.5cc pure glycerin + 2.5 cc, glacial acetic acid. Lastly, add to it 1/2 gms of copper chloride. In this solution the common algae can be kept for a number of years.

Or

For green algae only place the material in solution of 1% copper acetate + 2% formalin for 24 hours. Then preserve in 5% formalin.

Fungi: Take 25 gms of Zinc Sulphate and 1000 cc of water. Add to it 10 cc of 5% formalin. Preserve the fungus in it. It will maintain original colour of fungus.

### D. Preparation of some animal specimens:

**I. Sponges:** Collect the sponges from their aquatic habitat (most of them are marine, only a few are available in ponds, lakes and streams). They may be seen on sticks, stones and other objects submerged in the water, as soft white or brownish slimy blotches varying an inch or little bit more than an inch in diameter. Fresh water sponges could be preserved in a balanced aquarium. Other sponges can be dried and mounted in boxes. They can also be preserved in 5% formalin or 70% alcohol.

**II. Worms:** Planaria found in fresh water, and other parasitic forms of worms, namely, liver fluke, tape worm, round worms.etc., can be got from their respective habitat or host, such as birds, fishes, rats, dogs, cats etc;

Planaria could be collected by scrapping off from the submerged objects. Place one or more worms near the middle of a slide and cover them with a second slide. Put enough pressure upon the upper glass to flatten the worms, but be careful so, that they are not crushed. Place these slides in a shallow dish or pan and pour over them a solution of 5% formalin. Slightly tilt the slides, so that, the preservative will spread uniformly and fix the worms. Allow it to be submerged for a period of two hours or more.

**III. Fishes**: Collect the fishes from their respective habitat. If the animal is bulky, puncture it at places so that the preservative enter the animal body. Add 15% glycerin to the preservative, so that it avoids the animal body becoming stiff.

**IV Birds:** Birds can be preserved in 7% of formalin solution or they may be skinned off and stuffed.

**Usage of Specimens**

Specimens could be alive or dead and preserved. They could be microscopic as well as macroscopic. Both types are highly advantageous for a teaching learning session. Let us list the occasions where such specimens are used to bring about efficient and effective teaching.

- Live specimens, give the chance for the observation of the external features, locomotion, type of its adaptations to the environment
- Students can gain first hand information through specimens.
- Certain rare or endangered species could be well studied through the preserved specimens.
- Preparation of dry - specimens, like sponges or herbarium sheets, gives ample scope for students' active participation and whole hearted involvement.
- Specimens help in concretising the morphological as well as anatomical features of organisms.
- Encouraging students to prepare the specimens can inculcate disciplinary values among the students.

**'Check Your Progress'-4**

1. Specimens are usually made up of a sample or a part of or the whole of …..

   a) Plants and animals b) materials c) Machines d) Non-living things.

2. Specimens preserved in formalin are called

   a) Dry - specimens b) Stuffed specimens c) Bottle specimens d) Herbaria

3. Herbaria are prepared by using

   a) Parts of an animal

   b) Twigs of plants /whole plants (if they are small)

   c) Glass slides and formalin solution

   d) Parts of fossils

4. Write any two uses of specimens
5. Mention any two criteria for selection of specimens.

## 26.7 Maps and Globes - Meaning, Types, Selection, Preparation and Usage

Generally maps and globes are used both in Science and Social Science subjects. They are indispensable aid in teaching many subjects particularly, Geography, History and Economics. They are defined as "the graphic visual representations of the earth's surface, or position of it. Maps may cover different themes as well as locations. They are constructed based on the information borrowed from various sources. However, map writing is a special skill which needs proper and adequate training and practice. A map will be accurate representation on plain surface in the form of a diagram drawn to scale, as, the details of boundaries of continent countries, etc. Geographical details like location of mountains, rivers, altitude of a place, contours of the earth surface and important locations can also be represented accurately with reference to a convenient scale with suitable colour scheme.

There are several points or aspects that make a map reading more meaningful. They may be listed as follows:

- Understanding and interpreting the key of index.
- Understanding the lines - i. e boundary lines, lines of communication, lines indicating the rivers, contours, meridians and parallels.
- Understanding the colours, tints, shadows and symbols in a map or a globe.
- The top of every map is not north, but the direction of northern pole is north.
- Distinction between the various types of maps, such as relief, political, distribution maps etc;
- For a better map understanding, the position of the earth in the universe has to be understood first. Many students suffer from a notion that the earth leans in June towards the Sun northwards and in December southwards and thus the seasons are formed. But, you know, earth never dances that way! It is because, the inclination of the earth is constant, and the seasons are formed due to its rotation around the Sun.

***Globe:*** Globe is a spherical model of the earth. A good globe should provide correct information about areas, distances, directions and geographical shapes. Even the best flat map cannot achieve accuracy comparable to that of a good globe, as a flat representation of any segment of a spherical surface involves certain unavoidable

inaccuracies. The language of maps and globes is largely a language of colours and symbols, standing for locations, boundaries, rivers, routes and other features. Colour helps in legibility as well as beauty in maps and globes. Some symbols on a map look like the things that they are supposed to represent (like international road signs) while others are rather arbitrary and pupils should be trained to interpret them.

Before pupils understand maps, they should understand globes. Globes are of three types, namely:

**Political Globes:** which show the location, boundaries and place details of different countries;

**Physical - Political globes:** In addition to the above they also show physical features.

**Slated Outline Globes:** On which teachers and pupils can write using crayon or chalk. This is very useful for direct pupil activity.

Globes come in different diameter sizes; the 12" and 16" being the most commonly used. The larger sized globes have the advantage of readability. Globes differ in the level of information presented, depending upon the educational level for which they are intended. Globes are available suitably mounted with latitude scales, and free floating globes which could be taken out are also available.

Knowledge of map and the knowledge of globe - are reciprocal to each other. In fact, globe is considered as the true map. It is the true representative of the earth's physical personality. A globe gives a true idea of total environment at a glance in a classroom situation. It helps the students to understand more effectively, the abstract concepts, like, time, space, wind's planetary relations and proportions. Hence, every school should have globes. The following four types of globes may be kept in every school.

1) Political Globes

2) Physical Globes

3) Washable projection globes

4) Celestial globes.

**Types of Maps:** Maps are prepared on different themes. So, let us see some of the varieties of maps.

**Relief Maps:** (Regional and the world): This requires the knowledge of colours, symbols and other connected ethics of map making.

**Historical Maps:** This type of maps reveal the changing times and the growth

and decline of various kingdoms. To construct such maps, knowledge of lines of boundaries and other symbols is necessary.

***Distribution maps:*** There are several types of distribution maps. For example,

a) Vegetation maps

b) Population maps

c) Economic maps

d) Statistical maps

e) Dot maps

f) Pictorial maps

g) Language, race and other human division maps, etc.,

***Geographical maps:*** Contour maps, weather maps, seismological maps, archeological maps, rainfall maps, geological maps etc; are grouped as geographical maps.

***Selection of Maps and Globes****:* Maps and Globes are known for their one-way communication. Hence they have to be self-explanatory while selecting the maps and globes a teacher should employ certain criteria, and they could be mentioned as follows:

- A map must be large enough so that, every detail depicted should be visible to every pupil in the class wherever he is sitting.
- It should not deal with too minute details or too much written matter. Whatever the key index are used, they have to be interpreted.
- A map should have clear boundary lines, lines of communication, lines indicating the rivers, contours, meridians and parallels.
- The direction, namely, north, south, east and west must be indicated very clearly.
- Maps and Globes must have a professional appearance by means of coloured papers, charting tapes and adhesive letters.
- Maps and Globes must be in such a way that, if they are used, they should create a suitable environment in the classroom.
- Each map should deal with the specific concepts, focused exclusively.

***Preparation of Maps and Globes:***

Globes with different sizes and with different information are available in certain

educational equipment dealers. They could be purchased from there. And some of them could be prepared by the teacher as well as from a group of students. Making maps and globes can become individual student projects. Some concepts in the social science subjects, like world map, map of Asia, distribution of vegetation etc; will be challenging as well as channelizing the students energy. A map should have proper headings as well as footings with bold and contrast colours. One thing must be kept in mind very clearly that, these instructional aids should be self-explanatory.

**Materials required for the preparation of maps:**

1. White drawing paper-white cartridge paper.
2. Black cartridge paper
3. Coloured cardboard
4. Pencil - drawing H, 2H, HB
5. Water colour tubes
6. Poster colours
7. Hair brushes nos. 1- 6, flat brushes 1.5 cms, 2 cms.
8. Water proof drawing ink assorted colours _
9. Ruling pen, funnel pen
10. Script pen nibs - holder
11. Poster paper - assorted colour
12. Adhesive paste - gum
13. Felt pen - felt maker- assorted colours
14. Nylon fiber tip pens - assorted colours
15. Inks - different colours for felt and nylon tip pens.
16. Self adhesive tape - PVC - assorted colours 1, wire for edge binding.
17. Letter and number stencils
18. Stencil cutter - holder
19. Gauze cloth - (for backing)
20. Wooden reapers. 1/2” x 1" cross - section - any light wood.

The visuals to be depicted are to be pre - planned. A rough sketch may be drawn or a suitable book of diagrams could be selected. Textbooks, reference books, encyclopedias, journals, catalogues, etc., may serve as resource materials for preparation of maps.

Projection tracing is an easy way to make a large chart map from a small illustration. A small picture can be enlarged by using an opaque projector. The small book illustration can be placed on the projector and a cardboard can be attached to the wall. The size of projected picture may be adjusted to fit the required area by moving the projector closer to the cardboard (to make it smaller) or farther away from the cardboard (to make it larger) and focusing as necessary. The main lines of the projector picture may be traced with pencil. After completing the drawing, ink in the lines using pen or felt pen. This is one of the easiest and quickest ways to enlarge a picture.

The overhead projector can be used if a transparency or a slide of the original diagram is available. A photograph also may be used to enlarge or reduce pictures. By using the squaring method, a picture can be proportionally enlarged or reduced or even elongated and distorted purposefully. The lines drawn should be bold and of uniform thickness throughout. Felt marker will be highly suitable. Larger areas can be coloured uniformly by pasting suitable colour, poster paper over which shading could be done using felt pen, nylon tip pen or water colour etc.,

**Uses of Maps and Globes:**

Maps and globes have innumerable practical value. So, now let us list few of them.

- They are essential to understand the whole range of human activities, such as interpreting weather, travel, understanding current world events, etc ;
- They are essential for a full understanding of the world, its people and the space around us.
- Map reading skills have to be developed in pupils so that they are able to readily interpret the information contained on maps.
- Maps enable us to see the complete world at one time; Globes reveal half of the portion of earth at a time.
- Effective use of maps and globes is based on map reacting readiness, for this extensive observation of the local environment and early experience with globes and global concepts, have to be planned and opportunities must be given to the students.
- Pictures and films are to be used to give greater meaning and usual imagery to the

features and symbols used in globes. Systematic instruction in geographical concepts enabling pupils to read and interpret globes and maps should begin at the middle school levels as an integral part of the geography, and history lessons.

**‘Check Your Progress’ - 5**

1. Globe is a ……

   a) Round device  b) Earth

   c) Spherical model of earth  d) Sphere

2. A map is said to be ……..

   a) An instructional aid

   b) A two dimensional aid

   c) Self explanatory aid

   d) The graphic - visual representations of the earth.

3. The language of maps and globes is

   a) The language of colours and symbols

   b) English language

   c) Regional language

   (d) None of the above.

4. Mention any three geographical maps.

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5. Name any three distribution maps.

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## 26.8 Let Us Sum Up

In this Unit, the instructional aids other than textbook have been discussed. These are also known as support systems. They make the teaching - learning situations more effective and efficient. Details with respect to work-book, charts, models, specimens, maps and globes - have been narrated.

In all these cases, the respective, meaning, types, selection, preparation and usage have been explained. Among them, some are two-dimensional and some are three dimensional aids. But all of them are visual aids. A work-book in most of the time is used as a formative evaluation device. And it tests the intellectual or cognitive abilities that are developed after the teaching of a unit. Whereas charts, models, specimens, maps and globes enhance the quality of learning among the students. Each one of such instructional aids has its own criteria to get selected. A teacher, therefore, has to select the instructional aids very deliberately. Preparation of charts, models, specimens and maps can become a very good and interesting project work for the students. Usually preparation and use of specimens confines to the subjects under natural science. In all these cases, one thing is very clear, that, if these instructional aids are well prepared with good quality materials and preserved properly, then they can be used for several years.

## 26.9 Answers to 'Check Your Progress'

**'Check Your Progress'- 1**

1. b) Instructional aids
2. c) Textbook
3. d) All the above
4. c) Evaluation
5. a) Paper-pencil performance

**'Check Your Progress'- 2**

1. c) Visual aids
2. a) One-way communication
3. a) Concrete ideas

4. The different types of charts are,
    a. The narrative charts
    b. The tabulation chart
    c. The cause and effect charts
    d. The chain charts
    e. The Evolution chart
    f. Graphs.
5. Write any four criteria from selection of charts in section 26.4
6. Write any two uses of charts from usage of charts in section 26.4

**‘Check Your Progress’- 3**

1. c) Three - dimensional
2. a) Working models
3. b) Concretise
4. a. True
    b. False
    c. True
    d. True
    e. True
5. The two types of models are,
    i) Working models and ii) Static models

6. Write any two criteria from selection of Models in Section 26.5

**‘Check Your Progress’- 4**

1. a) Plants and animals
2. c) Bottle specimens
3. b) Twigs of plants / whole plants (if they are small)
4. Write any two uses of specimens from usage of specimens in section 26.6

5. Write any two criteria for selection of specimens from selection of specimens in section 26.6.

**'Check Your Progress'- 5**

1. c) Spherical model of the earth
2. d) The graphic visual representatives of the earth.
3. a) The language of colours and symbols
4. Mention any three geographical maps from types of maps in section 26.7
5. Write any three distribution maps from types of maps in section 26.7

## 26.10 Unit-End Exercises

1. What is a work-book? Explain its nature in detail
2. What are the characteristic features of a good chart?
3. How models are selected? What is the basis for their selection?
4. Explain any two procedures for the preparation of specimens of your choice.
5. What are maps and globes? Where are they used?
6. What are the general principles for selection of any instructional aid?

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# UNIT - 27 ❐ IMPROVISED LEARNING AIDS

## Structure



## 27.1 Introduction

In the previous Units you have come across several instructional aids. Sometimes they are purchased and sometimes they are prepared. Though due importance is given towards the durability or the longevity, after a few years, the instructional aids get distracted; may become broken. At this situation, it is easy to discard but we need to think and ask "Can anything be done to this equipment?" "So that, it get repaired or improved and becomes fit enough for re-use?" This is where the concept of "improvisation of aids" gets originated. So, in this particular unit, we shall focus on, meaning, importance and need for improvising the learning aids. You will get a list of merits and demerits of such apparatus. Inspiring illustrations also will be there.

Sometimes, teachers feel it is highly difficult to teach certain concepts without the support systems i.e. instructional aids. Especially in a subject like Science, several experiments have to be carried out, students must get training in scientific method, scientific attitude should be inculcated - all these are expected. Isn't it? For this, a well

equipped, sophisticated laboratory is needed. But in a developing country like India, all high schools with such a set up is so far from the reality. In this circumstance we cannot wait for that day, when the government will provide all facilities for teaching Science, and other allied subjects. As a solution to this problem, “improvisation of apparatus” - concept is generated. Its essence lies in the principle what is known as “Low-cost and No-cost materials” in which many learning aids are prepared by simple articles found in homes and other places. The only thing required is the ingenuity and resourcefulness of the teacher and his willingness to work. So, let us devote some of our time, to understand this concept and try to inculcate this value based skill into our personality with an honest effort.

## 27.2 Objectives

After studying this Unit you will be able to:

- Explain the meaning of “Improvised Learning Aids”
- Justify the need for developing skills in preparing Improvised Learning Aids
- List out the merits and demerits of Improvised Aids

## 27.3 Improvised Aids

By going through the introduction part this unit, you should not come to a conclusion that such an effort is confined to Science only. Even the subjects under Social Science category, give an ample scope for improving the apparatus and equipment. See, the principle here is “Nothing is waste; and a waste is not a waste”! As far as possible, think about the re-usage, re-cycling of the materials. This holds good irrespective of any subjects. Take for example, in the Geography, a globe, with faded colours and lines invites you to improvise it. Similarly, it could be an old periodic table, or a physical balance prepared by using the cheapest materials!

### 2 7.3.1 Concept

When a school budget does not permit the purchase of learning aids and other scientific equipments, to be used for instructional purposes, then the teacher may wish to solicit the aid of other faculty members and the students as well, in creating such equipment. For example;

- Calorimeters can be improvised with the help of several “tin” cans

- Christmas tree electric lights and wiring can be employed in teaching Series and Parallel circuits.
- Principles of light can be taught with the help of ordinary face mirrors found in the home.

While perforning such activities, students' complete involvement will be a boon. Because they will be glad to bring simple machines from home, like, nutcrackers, screws, hammers and other tools. All the above said examples imply that, an improvised aid is not the new one, purchased from the market, but a self prepared or repaired apparatus. And for such a preparation, the expenditure will be completely nil or very low. Most of the time, the thrown out materials and un-wanted waste materials are collected and get a touch of re-cycling process or repair, so that they could be re-used.

Such improvised aids have their own characteristic features. It becomes in priority, that one should know such special characteristic features, before jumping into their preparation. Hence, now, let us list out the characteristic features of low-cost educational materials or what is known as Improvised Aids.

i) They are made up of some of the raw materials that are available either free or at low cost in the local environment.

ii) The materials do not involve specialized skills and can be made by pupils, teachers or members of the community.

iii) The materials will be fit enough, so that they can be easily and effectively used by the teachers and pupils in clarifying the set objectives.

iv) The process involved in the production of the materials is simple and inexpensive.

v) The material is simple, accurate, and appropriate to the age level of the users.

vi) The material stimulates thinking, reacting, and discussing, experimenting or further study.

vii) The material is free from distractions, conflicts or bias.

viii) The production of the materials is not time-consuming.

All the above mentioned characteristic features, make it very clear that, improvising equipment will lead to an application or translation of a scientific idea. In such cases, talented, creative students are identified. Hence, some of the equipment construction activities by pupils should be encouraged even if there is sufficient budget to purchase many of the required laboratory supplies. For example, in teaching life sciences, the

teacher can use initiative and resourcefulness in creating some basic equipment, like a micro-projector can be assembled from one microscope and an ordinary slide projector which is used as a source of light. By tilting the microscope so that the viewing cylinder or barrel is parallel with the surface of the table, the image can be projected on a screen placed in front of the ocular. It is necessary that the mirrors and light box be removed and that the source of light (slide projector) be directed close to the stage of the microscope to permit the light to enter the objective and leave through the eye-piece on the screen. The size of the projected image on the screen can be controlled by varying the distance between the screen and the eyepiece of the microscope.

### 27.3.2 Importance

Improvising the learning aids is a challenging job both for the teacher as well as the pupils. A success in such activities always will be thrilling experience! No doubt in it. Hence such activities become very significant in a school life. So, let us now list out certain points which reveal the fact of importance of the activity of improvising instructional aids

- It brings a common forum for the teacher and the students to get involved completely with a constructive approach.
- It encourages the team spirit, and many talents among the students flourish, which otherwise would not have been expressed at all.
- As it is, there is a greater lacuna in providing the infrastructures and the learning aids to the schools. Especially in few subjects, there will be a serious dearth as far as learning aids are concerned. In these circumstances, the quality of teaching and learning will get affected. Hence construction of learning aids or improvising the instructional aids becomes very important.
- It is a fertile area for the all-round development of a student's personality, if used properly. It brings a coordinated development of cognitive, affective and psycho-motor domains of a student's personality. Because, students use their ideas (cognitive), do the work with utmost zeal and interest (affective) and honestly, industriously perform it. (psychomotor)

Apart from these, you may find some more relevant aspects that reveal more about the importance of improvised aids; so go ahead and enrich the concept.

### 27.3.3 Need

The concepts, namely, the importance of improvised aids and the need for improvised aids may apparently look overlapping. But there is a subtle difference also! So, in this caption we shall concentrate the same concept from a different angle, ie. need for improvised aids.

To understand this concept, we should take a swift look at the economic status of our schools. It is really pathetic. There are many schools even without the basic facilities, then what about the case of instructional aids? You may be surprised, to know that, there are certain schools even without a single instructional aid also.

Before teaching any concept, the objectives are framed first. These objectives may spread over the cognitive domain, affective domain and psychomotor domain. In order to achieve such objectives, mere oral explanation definitely will not suffice. If the learning aids are already available, it will be OK! Imagine, no instructional aids are there, then, there arises a need either to prepare low -cost instructional aids or to improvise them.

There might be some artistic values hidden in the students' personality. As it is, the fixed schedule of the time-table may not give a chance to nurture the student's hidden talent. But this has to be taken care of with some priorities. For this improvisation of aids is the best platform.

**A Few Illustrations for Improvised Aids**

Biology, there is ample scope for improvising aids. Let us have a look at the following examples:

Animal cages, terraria, aquaria, herbaria, and flower boxes, that provide adequate use for many interesting species of plants and animals.

A living laboratory consisting of frogs, birds, fruit flies (Drosophila melanogaster), earthworms, snails and fish can provide students with worthwhile experiences in the care and feeding of animals. Here biological principles can be taught effectively through the use of living as well as preserved specimens.

The above said activity, needs some simple materials like, mesh wire from the hardware store, sheet metal or tin plates, coffee cans, discarded glass jars and bowls, plate glass, and a few wooden crates are the basic materials for making homes for representative plant and animal life.

- Museum jars for display and study purposes are invaluable as teaching aids in biology. Empty pickle, fruit, coffee containers and large jars can serve as museum jars to house preserved biological specimens.

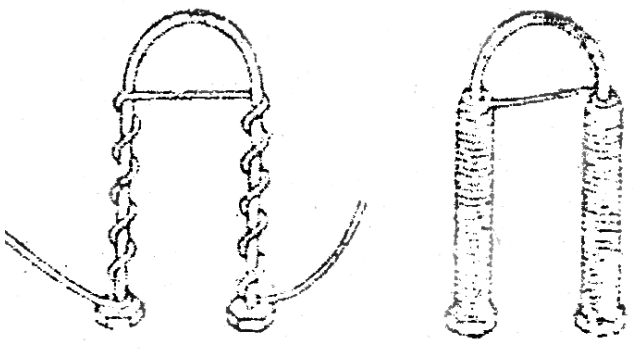
- Many insects can be preserved in glass jars that are filled with 70% alcohol.
- Aquatic snails, clams, fish, small mammals, can be preserved in jars containing 8% formalin. Worms and frogs can be preserved in 5% solution of formalin.
- An ordinary ink - pot can be improvised as a spirit lamp.

**Voltameter:** Take a plastic glass and pierce two holes at its bottom. Insert two copper wires one in each hole. Fill the glass with acidulated water and invert two test-tubes of water one on each wire. On connecting the wires to the two term of a battery, water will begin to decompose into Hydrogen and oxygen which get collected in the two test tubes. This is known as Voltameter.

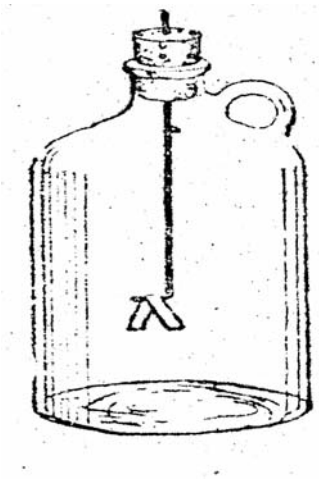
**Astronomical Telescope**: Take two cardboard tubes one fitting in the other. Fix two lenses of different focal lengths at the end of each tube. The lens of low focal length of around 2 cm or 3 cm serves as the eye piece and of 15-30 cm as the object lens.

**A simple syringe pump:** Take a broken glass or metal tube and close its one end with a cork carrying a glass tube. A small metal rod and a cork wrapped with rag will serve as a piston.

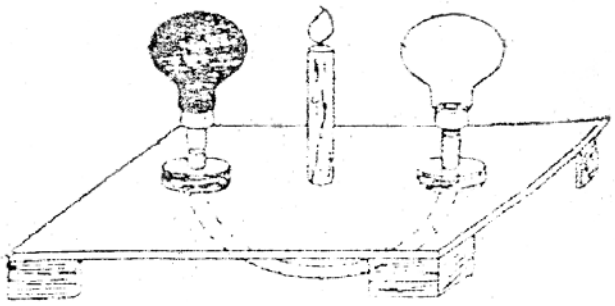
**Electromagnet (horse-shoe):** Obtain a U-shaped piece of iron about 5 mm in diameter. Wind a coil of several layers of bell wire on each arm of the magnet leaving the curving part. Begin at the end of one arm leave about 30 cm of wire sticking out for connections. Wind about three layers on this pole, then carry the wire across the top to the other end; be sure to wind this pole exactly as shown in the diagram. Connect the open ends of the wire to a battery and test for polarity with a magnetic needle. One end should be north pole and the other south pole. If both ends have the same polarity, you have wound the second coil in the wrong direction. In that case unwind the coil and rewind it in the opposite direction.



**Electroscope:** Push a thick wire through the cork stopper of a jag or bottle. Bend the wire so that a hook is formed and place a piece of aluminum foil over it. Lower the wire in jug until you can cork the jug. Any charged article brought near the open end of the wire will make the foil react.



**A Simple Thermoscope**: Fit corks and glass tubes in two used light bulbs and fix them on a wooden board as shown in the figure. Connect the open ends the glass tubes with rubber tubing. Blacken one bulb. Remove one bulb and pour any liquid into the U-tube until about 7 cm above the base board. Replace the bulb and slide the tube in or out a little so that the liquid is at the same level. Place a lighted candle in the middle of the two bulbs and see the effect on the level of the liquid.



A round bottom plastic vessel used as water container (water pot) can be improvised as a globe with suitable lines and colours.

A used up Refill, can be improvised and could be converted, used to drop the stains during microscopic mountings.

### 27.3.4 Merits and De-Merits

The details with reference to the meaning, nature and importance of improvised aids, might have created in your mind. All those could be considered as merits of improvised aids. But remember, this also is not free from demerits. So, while you jump into such creative activity, you must know merits and demerits, its pros and cons very well as improvisation cannot be a panacea for all the educational problems. Therefore, let us first list out the merits of improvised instructional aids.

**Merits:**

- It is the best measure to overcome the problems of low economic status and instructional aids enhancing learning among the schools.
- It inculcates the value of dignity of labour, in which both the teacher and the taught will be handling the so called wastes and un-wanted materials, and making the re-use possible.
- It gives a very good social forum for the students to share their ideas, creativity and responsibility with a team spirit.
- It is a thrilling experience, for the students in which, whatever they learn will last for a longer period.
- While assuring the efficiency and effectiveness to the teaching-learning sessions, it assures a sort of “belongingness” and “oneness” among the individuals.
- Such types of activities are actually the culminating point in which, student’s head, heart and hands get coordinated.
- Improvisation of aids is the best opportunity for self-learning. Children will be facing it as a great challenge both for their mental ability as well as their energy.

**Demerits:**

- Whatever may be the result improvised aids also, sometimes need money. The question comes like, who has to pay for this? Reluctance of teachers and administrators may not find it interesting; then the whole philosophy behind such activities fail.
- All the teachers and pupils may not be very skilled in preparing such instructional aids. Under this situation, it will be simply a pressure or burden on the teachers and the student.

- It is time consuming. And there will be no special provision for such activities with due weightage in the time table.
- There is a need to get trained first, so that, improvisation of aids is possible at its best level. Hence, appropriate training in the development, production and utilization of low-cost educational materials as well as improvised instructional aids, should occur in priority.
- Check on the internet. You will find amazing ideas to enrich your learning aids.

**‘Check Your Progress’ -1**

State whether the following sentences are ‘True or false:

1. Waste is a waste
2. Improvisation of instructional aids means repairing the broken ones.
3. ‘Improvisation of aids’ - is against to purchasing learning aids.
4. Improvisation of aids is similar to re-cycling and re-using technique.
5. To prepare improvised instructional aids, a laboratory is needed.

**Fill In The Blanks:**

1. Improvisation of aids is possible irrespective of …….
2. The process involved in the production of improvisation of aids is…….
   and .....
3. Improvising aids is a ..... job.
4. The common solution used for the preservation of organisms is …….
5. The activity of improvising instructional aids inculcates the value of ……....

## 27.4 Let Us Sum Up

To bring about a quality improvement in the teaching - learning process, several instructional aids are used. But sometimes, one may not find or get any one, relevant instructional aid at least. It may be because of the poor economic status of the schools also. Such incidents are not rare in India. Improvisation of aids is one of the several

ways to overcome the above said problems. The Philosophy behind this is “A waste is not a waste” And “Nothing is a waste”. It emphasizes the repair of broken or un-wanted equipments with minimum expenditure and insisting their re-use. Such aids are also known as low-cost educational materials. In this process both the teacher and the taught get involved actively. It is possible in all the subject areas. Like, preparing or repairing the old charts, maps, globes and other certain working models also. Usually, unwanted bottles wire mesh, glass jars, etc., are used in the Biology to keep plants, insects and other non-dangerous animals for observation. Any vacant or empty refill of a ball pen can be used as a stain dropper during microscopic mountings.

The activity of improvising instructional aids has several positive points, like, it inculcates certain social values, namely, dignity of labour, belongingness, oneness, togetherness etc;. It makes the students learn and take up social responsibilities. It tries to provide the best service with minimum or no expenditure basis.

## 27.5 Answers to ‘Check Your Progress’

**‘Check Your Progress’- 1**

1. 1. False
   2. True
   3. False
   4. True
   5. False
2. 1. Any subjects
   2. Simple and inexpensive
   3. Challenging
   4. Formalin
   5. Dignity of labour

## 27.6 Unit-End Exercises

1. What is meant by “Improvised Aids”?
2. Explain the need and importance of instructional aids.

3. What are the merits and demerits of improvised aids?
4. Illustrate the concept of improvised aids' with any two examples.

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# UNIT - 28 ❐ TECHNOLOGY DEPENDENT INSTRUCTIONAL AIDS

## Structure



## 28.1 Introduction

Instructional aids could be as simple as charts, maps and globes. It could be as complex as a computer, overhead projector and slide projector etc. You can find a categorical difference between the above said types of instructional aids. The first category does not depend upon any power supply, and they are easier to handle. These do not demand any technical knowledge or a perfect technician. No doubt, that a teacher can use both the types, but the latter ones may pose some technical problems while using in a class room situation. Hence a teacher must know some of the technological aspects of such instructional aids. So, in this unit you will get detailed information with respect to technology based instructional aids, namely overhead projector (OHP), Slide projector, TV and other electronic gadgets. The advantages of such aids and the mode of their usage also shall be discussed.

As has already been pointed out, all the instructional aids are broadly classified into two types as, Technology dependent instructional aids and Instructional aids that do not depend upon technology in general and projectors in particular. So, Overhead projectors, slide projectors, and TV are obviously, technology dependent instructional aids. These machines will work as the instructional aids by a good combination of their hardware and software parts. So, machinery parts may confine to hardware section, where as the information on, like, electromagnetic tapes, cassettes, CD etc; are said to be software. A teacher must know how to use the machines and how to maintain such machines. Apart from this, a teacher also should know the preparation of software parts, namely, transparencies, cassettes, slides, etc. It is because, the transparencies, slides or CDs relevant to certain concepts to teach may not be readily available, and therefore, if you know the procedure for such preparations, then your knowledge could be best utilized.

## 28.2 Objectives

After studying this Unit you will be able to:

- Explain the meaning of an Overhead Projector
- List out the advantages of an Overhead Projector
- Describe the procedure of maintenance of an Overhead Projector
- Explain the procedure for the preparation of transparencies
- Explain the meaning of Slide Projector
- List out the advantages of a Slide Projector
- Explain the procedure of maintenance of a Slide Projector
- Explain the procedure for the preparation of slides
- Mention the advantages and uses of VCP, TV and Video cassettes

## 28.3 Overhead Projector

Overhead projector is one among the projected aids. This will become useful under the condition of a constant power supply. That is to say, all projection equipment requires electric power for operation. It can project the diagrams that are on transparencies, with a bright and magnified size. On transparencies, any figure, diagram, statistical

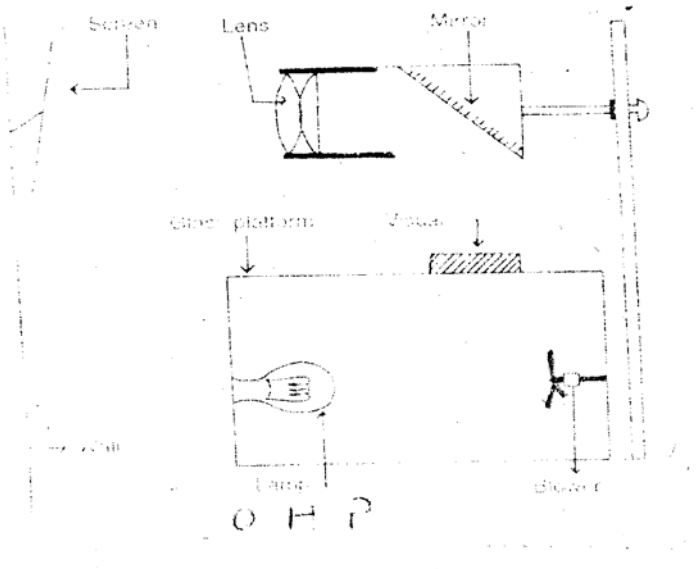
information, tables, etc; could be drawn, and projected by using OHP. The projected diagram on the screen or upon a white wall before the students in a class becomes one of the best instructional aids.

### 28.3.1 Meaning and Advantages of OHP

The name 'Overhead Projector' itself conveys the meaning of the device. It is so named, because of the fact that the projected image is behind and over the head of the speaker. Ina overhead Projection, a transparent visual is placed on a horizontal stage on top of the light source. The light passes through this transparency and then is reflected at an angle on to the screen at the back of the speaker,

***The Design of OHP:*** It consists of a strong source of light, reflector (concave mirror), condensing lens, slide carrier and objective lens. All these elements are contained in a light weight metal case.

It contains an area of vertical projection besides the straight horizontal path of the light available with the usual projectors. The path of the light rays is again changed to a horizontal one by a mirror placed at 45° angle and continues over the shoulder of the teacher to the screen as may be evident from the diagram given below.



- It contains a large aperture of the size 25 x 25 cm or 20 x 20 cm for placing the slides and other visual materials.
- It provides for the focusing of the image on the screen by vertical movements of the projection head (containing the objective lens and mirror).
- There is a provision of constant flow of air past the lamp by a cooling fan in the base of the projector.

***Advantages of Over-Head Projector****:* Overhead Projector is far better when compared with other two - dimensional, non - projected instructional aids. With suitable transparencies, an OHP seems to be an effective and efficient device for the presentation of any information. So, now let us list out the advantages of the Over-Head Projector.

- It makes the teaching process quite illuminative, illustrative and impressive. Even in the illuminated room, it could be operated. Therefore there is no need of darkening of the room.
- It saves the time of drawing the diagrams on tile board and also, a good transparency prepared at leisure well in advance gives confidence for teachers.
- The transparencies once prepared can be preserved for the re-use.
- The image is projected over the shoulder of the teacher; therefore, he may face the class all the time.
- It allows the teacher to use the screen as a “black board”. He can write on the transparencies, with a marker pen, or wipe off etc. Any opaque sheet can hide the portion of a diagram, and the teacher can make use of this opportunity to explain any diagram step by step by projecting a portion of the diagram as he wants.
- If he uses a pointer on the slide, it gives a more effective explanation. He need not turn towards the screen and locate the parts of a diagram.
- The operation of the OHP is quite easy. It simply demands turning of the power switch, placing of the slide on the projection stage and focusing of the image on the screen.

### 28.3.2 Maintenance of OHP

Overhead Projector needs a very careful handling. And a few aspects are to be kept in mind in order to maintain an OHP in a good condition. Those aspects could be listed as follows :

- The projector should not be subjected to mechanical vibrations.
- A voltage stabilizer is a must to avoid the bad effects of voltage fluctuations.
- Halogen lamps particularly will not withstand heavy surge in voltage. The lamp should not be touched by hand.
- OHP should not be kept in operation continuously for long periods.
- The Fresnel lens is protected by a glass plate on top. It is necessary to remove dust or dirt on the protecting glass and also from the outside lens surface by flat camel hair brush.
- Surface silvered or aluminized reflector should not be cleaned.

### 28.3.3 Preparation of Transparencies

The overhead projector is useful only by means of transparencies; otherwise, it becomes just a machine. But there transparencies will be available as blank sheets, on which the required diagram, table or any information has to be drawn or written. Hence you must be aware of the procedure for the preparation of transparencies. These transparencies could be prepared by any of the following four methods.

***Hand - drawn Transparencies:*** The acetate sheet is placed over the paper and kept in position by paper clips or pins or self-adhesive tape. The sketch is carefully traced using a marker pen or sketch pen with quality Indian ink. Water colour impressions and brush pens also could be used. But the water colour impressions could be easily erased. Hence, if the transparency is required for permanent use, the impression carrying surface should be protected by either clear varnish spray or keeping acetate sheet over it.

Acetate sheet may be coated with good quality gelatin. About 5 gms of gelatin is dissolved in 25 gms of water by boiling. The solution is applied evenly with a flat brush on acetate sheet. On the coated side, it is to draw with good quality Indian Ink. The sheet can be coloured using transparent water colour.

***Photographic Transparencies:*** Employing reflex printing process, negatives on reflex printing paper can be made complicated diagrams or rare pictures printed on books or composed diagrams using Indian ink. With these negatives, positives can be printed on sensitized dia-positive acetate. The acetate film is available as sheets of 10" x 12" or rolls. The picture can be coloured using transparent water colour. The dia-positive acetate sheet also can be used as bromide paper and direct enlargement made

on it from any photographic negative using an enlarger. The enlargement can be coloured.

***The Diazo Process:*** To make a large number of copies of transparencies, diazo chemical coated acetate can be used along with master drawn on translucent paper. The two are kept together exposed to sunlight or ultraviolet source for a suitable time (2 to 3 minutes). The image will develop on exposure to ammonia vapour. Beautiful coloured overlays can also be prepared by this process.

***Copying Machines:*** Copying machines produce the positive and negative transparencies from the original material. In the infra-red copying machine, the transparency film is placed in contact with the original. The exposure dial is adjusted to provide desired image density. The original and film are fed into the machine and in just 4 seconds, a transparency can be obtained in black and white. OHP transparencies may be made easily and quickly by such thermographic processes. (eg.: using a copier like Xerox)

**‘Check Your Progress’-1**

1. Technology dependent aids are characterized by

   a) Machines and power supply

   b) Techniques

   c) Machines

   d) None of the above

2. While using an OHP a teacher can explain

   a) Turning towards the screen and pointing the figures or diagrams

   b) Facing the students as well as pointing at the diagrams or figures on the screen

   c) By standing at one end of the class room and pointing towards the figure or diagram on the screen.

   d) None of the above

3. State whether the following sentences are True or False:

   a) OHP allows a teacher to use the screen as a “blackboard”.

   b) While using OHP the classroom must be devoid of light i.e. the class room must get darkened.

   c) The Projectors should not be subjected to mechanical vibrations

d) OHP should not be kept on continuously for long periods.

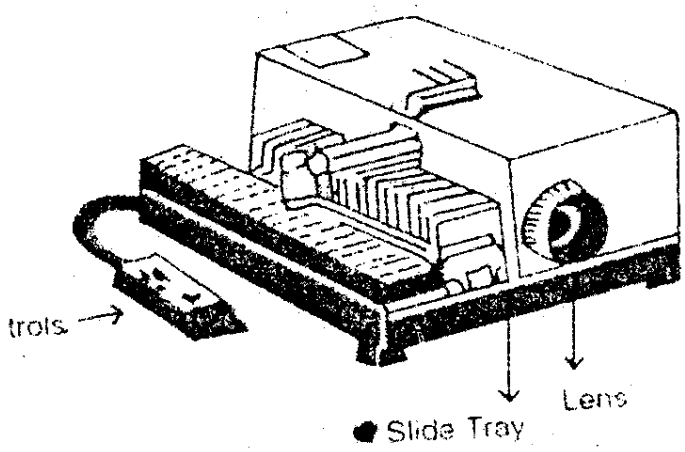
e) One cannot get a hand — written diagrams on the transparencies.

## 28.4 Slide Projector

Slide Projector is yet another projected instructional aid. It could be worked with the power supply. Similar to transparencies in OHP, slides are used as software part here. So, in the following discussion you will come to know about the meaning and advantages of slide projector, and the procedure for the preparation of slides.

### 28.4.1 Meaning and Advantages of Slide Projector

Slide Projector is used to project the slides. Here the slides are projected by an instrument equipped with a powerful light source in a lamp house and carrier for holding slides of suitable sizes. It is a simple mechanism and the essential elements in it are the same as in a film strip projector. Usually a double slide carrier is fitted into the projector so that when one slide is projected on the screen, a second slide can be kept ready. When the class views the second slide, the first slide can be removed and another inserted in its place. There is a “thumb mark” or guide marker on the upper right hand corner of each slide. Most 2" x 2" slide projectors today use drums or cartridges in which many slide can be loaded in proper sequence in advance. The projectors can be operated and focused by remote controls. It is also possible to record the narration in a tape-recorder and the latter may be hooked up to the projector in such a way as to give necessary commentary even in the absence of a teacher. This is said to be Slide - Tape sequence.



***Advantages of Slide Projector***

The slide projector is quite handy and portable with several advantages. Now let us list out the advantages of slide projector.

1. It is light and easy to transport
2. It is non - fragile and non - inflammable
3. It is available on moderate expenditure
4. Availability of projector with low voltage lamps or petromax lamps making it possible to use the same even in non - electrifies areas.
5. Complete darkening of the room is not absolutely necessary. There may be sufficient light to enable the pupils to take notes.
6. The projected image has greater power to catch the attention of the pupils.
7. Varieties of information may be given incorporating maps, drawings, photographs etc, through the slides. The teacher can give suitable commentary making use of the books or can record the commentary on a tape and replay it during the use of a slide projector. Further the pictures can be retained on the screen as long as necessary.

### 28.4.2 Maintenance of Slide Projector

Slide Projector like any projector needs a Careful handling. The machine has to be maintained properly. Therefore we shall try to list out the factors that result in the maintenance of the slide projector. The machine needs a still platform while it is used; and it should not be subjected to mechanical vibrations.

Like in any electronic gadgets usage, here also a stabilizer is needed, which could avoid the adverse effects of the power supply fluctuations. Any sort of exposure moisture should be avoided because this may result in fungi attack, and there by spoiling the machine or rusting of the iron parts.

- It must be always dust and dirt free. This is the most important aspect.
- It has to be used often and often, so that the machine will remain in a good condition.
- Proper use and keeping it back in the position after the use is also important.

### 28.4.3 Preparation of Slides

In order to prepare the slides one has to follow several steps. These steps have been explained below: First select a suitable topic from the syllabus after considering the possibilities of depicting the subject - matter by drawings, diagrams, photographs

or still pictures etc; Then prepare of detailed script, describing the contents of each frame indicating the method of preparing it i.e., whether by art work or something else. Make rough sketches of the figures on the paper so as to serve as guide when final sketches are drawn. Draw the sketches in suitable sizes on white drawing paper with Indian Ink to suit the 2" x 2" slides then reproduce the same on the slides. Arrange the drawings and photographs according to the script and number them in sequences. Prepare the guide book which is to follow the slide sequence explaining the details of each frame. The commentary may even be recorded on tape and it may be used in combination with the slides. An audible signal like the stroke of a bell recorded with the commentary may indicate when the next frame should be shown.

The general procedure of making simple slides may be outlined as under:

- Try to select the base material for preparing slides. It can be plain glass, cell - plane, etched glass, a clear transparent cellulose acetate film.
- First of all a rough layout is laid down. For this purpose, the outline of the projection areas is to be marked off on the tracing paper. Then the basic illustration is to be sketched and other symbols or lettering is to be positioned according to plan.
- Now a sheet of transparent base material (glass or cellulose acetate etc.) is placed over the original sketch or layout. A drawing pen or marking pencil is used for tracing the figure, art work or lettering directly on the transparent sheet.
- For better illustration, one can add colour, symbols and patterns by use of any pencils, inks, tapes and coloured adhesive sheets.

Photographic slides can be produced with the help of suitable camera by taking photographs of the objects or events. The process begins with exposure. After exposure the photographic film is developed and printed on a transparent glass plate. After its development, the positive print is covered with glass are taped together along the glossy edges and the slide is ready for projection.

**‘Check Your Progress’ - 2**

1. Slide Projector is

   a) Over-head projector

   b) Non - Projected aid

   c) Made up of a series of slides

   d) None of the above.

2. A slide projector usually will have

   a) A double slide carrier

   b) A triple slide carrier

   c) No slide carrier at all

   d) None of the

3. State whether the following sentences are True or False

   a) The Projectors can be operated and focused by remote controls

   b) Slide projectors are very heavy and it is very difficult to transport

   c) Slide projectors can be used even in non-electrical areas

   d) The machine should not be exposed to any sort of moist

   e) Preparation of slides includes the preparation of the relevant guide books also.

   f) Each slide will have some information which is termed as “frame”.

## 28.5 VCP, TV and Video cassettes - Advantages and Usage

**Television** : Television is another technology dependent instructional aid which attracts both the senses, namely auditory as well as visual sense of the learners. Hence, it is considered as very powerful device in the transmission of knowledge. The successful placing of the satellites into orbit, has added new dimensions in the use of television for instructional purposes. A regular educational service (EDUSAT) for schools and college students in the shape of model lessons and other instructional programmes can now be seen on the TV screen. Television with a slight modification can be converted as CCTV i.e. closed circuit Television. The close circuit television broadcasting is a sort of micro level local arrangement limited to a single school or several schools lying in a particular region. It is connected by a cable or micro wave system. This telecast exclusively restricted to the terminals which are connected by a network. That means, the telecast cannot be received by other sets outside the selected network. Anyhow, you cannot deny but just accept that, Television is a powerful agency of communication. Live programmers and motion pictures can be broadcast in television. Television has all the advantages of a projected aid and dynamism of motion picture. Television provides multimedia learning experience. Since the programmes are announced earlier, the institutions can prepare the pupils in advance to view and listen to the telecast.

Many telecasts, in addition to programmes exclusively for schools, can be considered educational in a general way and viewed by pupils with advantage. Hence Educational Television (ETV) includes programmes whose primary interest is to educate rattler than entertain. ETV generally includes instructional television and non - commercialized television programmes.

Instructional television (ITV) includes programmes related directly to an organized programme of formal instruction and is directed to individual viewers who come under non-formal education programme. In all these cases, suitable follow - up work by the teacher is essential to consolidate the gain of knowledge. Education through television involves careful planning Training of teachers to make the best of the equipment and programmes telecast is necessary. The centre for educational technology of the NCERT has launched such training programmes of resource persons drawn from the ranks of teachers of primary schools, who will in their turn, train further teachers.

***Video Cassette Player (VCP):*** Some times pre-recorded video tapes can be played through television *in* the classroom. Video films on educational topics shown through television in the class room have the same effect on the students as the ordinary cinematic educational films do. Video films have the added advantage over ordinary films in that the arrangement is compact and requires little space and time for manipulation. It is the most convenient of all audio- visual teaching - learning materials.

***Video Cassettes:*** These are very popular electronic devices now a days. They have equally spread over both in the field of education as well as entertainment. The potential advantage of video cassette lies in the fact that control of the equipment and the learning process is placed in the hands of the learner through control over the mechanics of the machine i.e., stopping, starting, timing, reviewing and previewing and consequently the capacity to order the sequence of events, controls the rate of learning, and facilitates practice sequences.

The potential exists for providing the basis for learning wide range of motor, intellectual and cognitive and interpersonal skills as well as affective aspects. Only the text book or any other printed material cannot deal satisfactorily, as it could be with a television, video cassettes and VCPs.

In some countries, video cassette programmes are being bult round the study centre concept, a location where several video machines are available to which students bring their study notes. The students run the programmes as individuals. Sometimes study centres provide for group sessions during which video cassettes are played.

In other countries some institutions assure that students can gain access to such equipment and make programmes which will be used on an individual basis either

supplementary learningmaterialorintegral to the teaching programme.

The problems associated with television programme production are:

a. Cost of production of programmes.
b. Equipment costs cannot always be kept down by using lower quality equipment.
c. Cheaper equipment formats do not enable technical material such as animal or plant tissue to be represented adequately.
d. Video production for educational purposes calls for new techniques different from the entertainment modes. Producers, directors, script-writers need to be knowledgeable about teaching and learning. Many of the old techniques of film and television will a longer be useful. For example, the very basic concept that programmes must have a beginning, middle, and an end will no longer apply as a cassette could just as easily consist of a series of short video events which sets a problem, teaches a technique or brings together a range of visual material to make concepts or principles clear.

**Advantages and Uses :**

- Television is considered as the best instructional aid, because it warrants visual as well as aural sense organs there by making learning a very smooth process.
- It can help the teacher in several ways, starting from his professional growth to bringing quality learning among the students.
- Television brings cheerful learning experience blended with entertainment among the student. They can view and hear the work and talk of an eminent educationist, renowned teacher, creative scientist and excellent demonstrator, musician or artist. Their presence on the TV screen may provide them clue warmth and nearness for drawing maximum educational and psychological advantages.
- The instructions imparted through television have the potentiality of improving the process and products of learning as they involve thorough planning, systematic presentation and integration of a wide range of audio - visual material and appliances.
- Televised programmes prove helpful in upgrading the curriculum and enriching the educational programme more easily and economically.
- Any information from any nook and corner of the world can be displayed as a five programme with reality. This could be used in the class room teaching.
- The expertise and the talents of good teachers from any part of the world could be electronically stored and used through tele-programmes, so that shortage of good teachers, classrooms, audio - visual aids and other resources may be overcome through such planned televised programmes, to some extent.

- Television instructions may bring greater equality of opportunity for all pupils. For example, the pupils studying in remote rural or under- privileged areas may be equally benefited by the TV Programmes.

**‘Check Your Progress’ - 3**

1. Television is considered as:

   a) Visual aid

   b) Audio - aid

   c) Audio-visual aid

   d) Learning aid

2. When several televisions inter connected by means of a closed circuit in a particular area, the system is called ————————

   a) Educational TV

   b) Instructional TV

   c) Close Circuit TV (CCTV)

   d) None of the above

3. The potential advantage of video cassettes lies in the fact of control of the equipment and learning. Process can be manipulated by

   a) The teacher

   b) Student

   c) The parents

   d) Elder persons

4. Video cassettes provide an opportunity to display the educational programmes for

   a) Only one time

   b) Two times

   c) Multiple times

   d) None of the above

5. The organisation which caters for the training of teachers with respect to planning

and execution of educational tele-programmes is .....

a) State government

b) Central government

c) NCERT

d) NGO

## 28.6 Let Us Sum Up

In this particular unit you have come across detailed information with respect to technology dependent instructional aids in general and Overhead projector, slide projector, VCP, Television and video cassettes in particular. In all these items, the machines will work as instructional aids by a good combination of their hardware and software parts. Overhead projector and slide projectors are the best visual aids. In case of a overhead projector, the magnified diagram will be behind the teacher, so that a teacher can face the class without turning towards the screen, but can make the students to observe the exact parts of a diagram by directing them. It makes the teaching process quite illuminative, illustrative and impressive. While using an OHP, there will be no need of darkening of the room. Details regarding different methods of preparing transparencies are also discussed. Slide Projector is yet another projected instructional aid. Being a light, non-fragile, portable machine it will be very advantageous to teach with the help of a slide projector. Here complete darkening of the room is not absolutely necessary.

So, with sufficient light, students can easily write or jot down some points. Television has surpassed both the Overhead projector and slide projector in so many ways. But it has its own demerits also. Anyhow, the televised programmes through instructional television and education television are very much appreciated by professionals. It enables one to make use of live programmes and motion pictures by means of broadcasts in learning experience. Any information from the nook and corner of the world can be displayed as a live programme with reality. This could be shared by the students in the classrooms. The expertise and the talents of good teachers from any part of the world could be electronically stored and used through tele-programmes, Televised programmes are actually considered as a strong means in bringing equality of opportunities for all pupils belonging to different strata of society.

## 28.7 Answers to 'Check Your Progress'

**'Check Your Progress'-1**

1. a) Machines and power supply
2. b) Facing the students as well as pointing the diagrams or figures on the screen
3. a) True
   b) False
   c) False
   e) True
   f) False

**'Check Your Progress'- 2**

1. c) Made up of a series of slides
2. a) A double slide carrier
3. a) True
   b) False
   c) True
   d) True
   e) True
   f ) True

**'Check Your Progress'- 3**

1. c) Audio - visual aid
2. c) Closed circuit TV (CCTV)
3. b) Student
4. c) Multiple times
5. c) NCERT

## 28.8 Unit-End Exercises

1. What is OHP? What are its advantages?
2. How will you prepare the transparencies to teach a particular concept?
3. Mention the factors that help the maintenance of slide projector

4. What are the educational uses of TV?

## 28.9 References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# UNIT - 29 ❐ COMPUTERS AS INSTRUCTIONAL AIDS

## Structure



## 29.1 Introduction

The quality of education is always determined by an efficient and effective set of learning outcomes. To achieve this goal the teaching process in general has undergone tremendous modifications. Here the quality of learning has become more important than the quantity of learning. It is more important to know how much a student has learnt than how many have learnt. This implies that, a teacher must give individual attention while teaching. But practically this appears to be a Herculean job. Hence a teacher with other support systems, namely, audio - visual aids can try to achieve the above said goal. In the previous units you have come across the information with respect to audio - visual aids. In this particular unit you will learn about a very special device, what is known as COMPUTER, and its role in teaching- learning process.

Very strongly, now - a - days, it is felt by each and every one that, advancement of any society or nation depends upon the quality of education being imparted there. In

turn, the quality of education demands, the adoption of modern and easily understandable techniques of teaching. In this context, computers are fast becoming effective and efficient devices in teaching - learning process. Computers, if used properly, can help to teachers and students in several ways. For example, they can take over the most of the drudgery of schooling like, classifying children according to abilities, time-table preparation, etc., They can provide direct interaction between student and the subject matter to be learned; even they can engage the students in tutorial interaction and dialogue. Usually, it is observed that, students spend varying amounts of time and practice to achieve mastery of specific instructional objectives. So, computers used as an aid while teaching, are considered, as instructional aids. A computer is the best instructional aid, because it gives a multi - media approach to teaching - learning process. Hence in this particular unit, we shall discuss on the topic, 'computers as instructional aids', interactive software, its meaning, need, importance and uses. We shall also focus on the development and presentation of power point slides, as well as techniques of using an LCD and its advantages.

## 29.2 Objectives

After studying this Unit you will be able to,

- Explain the meaning of "computers as instructional aids"
- Justify the need and importance of Interactive Software
- Explain the procedure for the development of Power Point Slides.
- Describe the techniques of Power Point Presentation
- Mention the advantages of LCD

## 29.3 Computers as Instructional Aids

Although a computer can be used in many ways in the educational programmes, the following are some of the areas where it proves to be effective in the instructional process. They are:

- Drill and practice
- Tutorial dialogue
- Simulation and games
- Information handling, etc;

Alongside the specific examples of application of computers in education, different terms are used with specific purposes, For example, terms like, computer assisted or aided learning (CAL), Computer assisted / aided instruction (CAI), and computer

managed learning (CML). These terms are used by different authors in different context. Indeed every author seems to have his own definitions and classifications for some technical terms. Anyhow computers have been considered as very effective instructional aids, though they intervene in almost all the aspects of the educational field. Most of the time, computers are used to provide individualized learning situations to the students. This type of activity is termed as computer assisted instruction. Computer assisted instruction has its origin from programmed learning. This is a form of individualized instructional where a student works at his own pace through written material displayed usually on the computer terminal.

The computers are influencing the school field like anything. They perform a dual task, like; they expose students to modern technology and also inculcate in them a new and scientific approach to leaning. Computers have touched upon almost all the nook and corner of the educational development, administration and management, educational planning, documentation, scoring and processing of examination results, researches and surveys.

Apart from the above list, there are certain major areas, where a computer acts more as an instructional aid, they are:

- It relieves the teacher in many of his/her tedious time - consuming tasks. It makes the teacher, the students and computer work in close co-ordination.
- The teacher can prepare the course materials, and utilize it while teaching and help the students in learning.
- Students also can select the course material which will be of their interest and need based.
- Computers motivate students to achieve aims in an optimal manner.
- Computers can assist in the achievement of instructional aims and objectives by providing appropriate material for students of diverse capacity and achievement levels.

**‘Check Your Progress’ - 1**

1. Computers facilitate .....

a) Individual learning

b) Rote learning

c) Good handwriting

d) All the above

2. Computers play their role in ……..

   a) Teaching process

   b) Learning process

   c) School administration and management

   d) All the above

3. Computers are doing a dual work, as ……..

   a) Playing the role of a teacher and student

   b) Teaching and learning

   c) inculcating in them a scientific approach to learning

   d) None of the above

4. Computer assisted learning has its origin from ……....

   a) Programmed learning

   b) Military science

   c) The subject mathematics

   d) All the above

5. Programmed learning is a type of ……..

   a) Team teaching and team learning

   b) Individualized instruction

   c) Mass communication

   d) Regular classroom teaching- learning session.

### 29.3.1 Interactive Software - Meaning, Need, Importance and Usage

You must know that, a computer is useful only with its loaded software packages. These software packages could be, of any type, like, system software, operating software, utility software or user friendly software etc., In this list, you can have one more type, what is known as interactive software. So, in the following discussion you will come to know about the meaning, need, importance and uses of Interactive software.

Software is the one, which makes the computer functional. Likewise, interactive

software will be user- friendly, and provides a two - way communication between the student and the subject matter. A good interactive software programme will start its work by identifying the way a student seems to learn best. It can review his past history of learning and then presents a programme built on his strength. Even it can store all the information gained from all students who have worked on it. This information may be re-analysed and, much of the teaching strategies which were not effective may be rejected and strategies which have succeeded may be continued.

Problem solving experiences also could be given to the students, in the following manner:

A problem is presented on the screen of the computer. The student responds by typing relevant related decision on the computer. Based on this, feedback is displayed on the screen. A new problem is then presented directly related to the feedback to the learner regarding the previous mode of decision. Again, the student types a choice to be made involving perhaps four alternatives in a multiple - choice item. Feedback is again provided to the student on the quality of decision made, as well as new sequential problem presented on the screen.

In the context of learning, the rapid response to a learner's action is of particular benefit as there can be quick reinforcement of good ideas which the learner has and any misconceptions may be corrected. Many motor skills can only be learnt by direct use of the equipment concerned. Computer - assisted instruction, being one of the interactive software, facilitate teaching -learning situations in several ways. It could be used for drill work or for repetitive review.

The most powerful advantage of a computer is its continuos dynamic activity. A computer will not become frustrated. Each student using a computer terminal may experience the learning items. A learner may read a few statements or see a demonstration on the screen of the computer. He may respond to a multiple - choice or completion item. Then the computer screen may show a smiling face if the response given was correct. If incorrect, the student may try again to answer or respond correctly. If here also, the answer becomes wrong, then, the correct answer is provided on the screen.

So, all the above said points have done two aspects simultaneously, namely, they have explained you the meaning and nature of an interactive software as well as their need and importance. Now let us list out some of the uses of Interactive software programmes.

- With clear directions in a realistic situation the interactive software programmes creates a high level of interest and maintains it throughout the learning process.
- They can provide information in a very precise but in an effective way.

- They are highly individualistic in their nature, so that each and every student can learn according to his own pace of learning.
- Immediate feedback is the essence of such programmes which further makes the learning stronger.
- They check up how well a learner understands a topic through questions.
- An interactive programme could be of any of the following type, namely, drill and practice, simulations and games.
- Such programmes enable the student to make models of real life situations, formulate and test ideas and hypotheses.
- A computer data bank helps the student to obtain data and process it quickly and meaningfully.
- A student can take a test with the computer and can obtain immediate feedback so that he can rectify his deficiencies and improve his learning.

**‘Check Your Progress’-2**

1. The interactive software provides an opportunity for interaction between ……..

   a) The teacher and the students

   b) The students and the students

   c) The students and the subject matter

   d) All the above

2. The computer becomes functional only with the association of ……...

   a) Soft wares

   b) Machines

   c) Subject matter

   d) Teachers

3. The best advantage of an interactive software is its ……....

   a) Course ware

   b) Immediate feedback

   c) Interaction

d) None of the above

4. State whether the following sentences are True / False.

a) Computers cannot surpass the teachers

b) Computers are known for their swiftness and accuracy

c) The computer fails to appreciate the emotions of the students.

d) Interactive software provide one way communication

e) Computers motivate students to achieve educational aims in an optimal manner.

### 29.3.2 Development of Power Point Slides

Power Point slides have to be developed with proper planning. So, you have to frame the instructional objectives first. This has to be done with reference to the concept selected. Like, for example, if the selected concept is “Photosynthesis”, the following instructional objectives could be framed.

Students will be able to:

- Define photosynthesis
- Give examples for the plants which do photosynthesis
- Explain the process of photosynthesis
- Mention the two phases of photosynthesis
- Describe the Light reaction in photosynthesis
- Explain the dark reaction in photosynthesis
- Compare the light and dark reactions in the photosynthesis

Based on the above said objectives students can first write down the relevant points to the respective objectives. You can do the clipping of different pictures, use animation technique and also can give the sound effect during the Power Point slide preparation. After this preliminary work, you have to do the remaining work on the computer.

#### *Introduction to Power Point Presentation*

When we have to make a sales presentation, present a new product idea to an audience, PowerPoint can give an effective presentation means. It includes a few ways to create a new presentation and several different slides, options. Only thing we have to

do is select most effective options, to present the subject. Power Point offers mainly three ways to create presentations.

***Blank presentations:*** This is to give an entirely new presentation which we have start from the scratch.

***Using Templates****:* This gives an initial idea in selecting the look of the document.

***Auto-content Wizard:*** With this option PP (Power Point) leads us step by step to create a presentation.

**Creating a presentation**: Click Start > Programs > Power Point > (choose from the options)> OK

***Auto-content wizard:*** From the PP dialog box click Auto-content wizard, a dialog box appears. Go step by step from Start to Finish by clicking the check boxes and choosing from the options.

Or Click File > New > General > Auto-content wizard

***Using a Template:***

Start > Programs > PowerPoint > Templates (choose from the options) > OK

Or Click 'File > New > Design Templates (choose from the options) > OK

***Blank Presentations:***

Click Start> Programs > PowerPoint > Blank presentation Or Click File > New > General > Blank presentation

***Inserting Text into a Slide:*** Click the Place Holder (Dotted outline box) > Type the text > Click outside the place holder. Editing the formatting of the text in the place holder is done in the same way as that we do in word processor programs. We can insert almost anything like Charts, Tables and Pictures into the place holder in the same manner as we do in MS Word.

***Moving between the slides:*** When we create a slide, we see only a single slide on the screen. This view (called as slide view) helps to work on that particular slide. But when we add more than one slide and want to work on different slides we can navigate between the slides easily. One way is to use the scroll bar / Page Up / Down keys. Another way is to use the icons located in lower left corner of the window. They are:

***Slide view****:* Shows individual slide.

***Outline view:*** This view gives an outlined overall flow of the presentation and we can add or edit text.

***Slide sorter view****:* This gives a thumb nail view of the entire presentation.

***Notes Page view****:* This view is to setup speaker notes.

***Slide show:*** This is used for on-screen slide show of the presentation.

***Editing Text:*** Select the place holder in which the text you want to edit is contained then proceed to make changes much the same way you do in MSWord.

***Editing a Chart****:* Double click the chart. PowerPoint selects the chart and displays the relevant data sheet make the changes much the same way as you do in MS excel.

***To change the chart****:* Click Insert > Chart > Chart (Now on menu bar) > Type (Choose from the options) > OK.

After a careful formulation of individual slides if you want to see whether the flow of the subject is effective or has to be altered, go to slide sorter view and see if you have to add or remove or rearrange the order.

***Rearranging of Slides:***

Click the Slide sorter view icon and you come to that view. Click and drag the slide to the new location. Note: Double clicking on slide in the slide sorter view changes it to slide view.

***Deleting Slides:*** In slide sorter view, click the slide and press delete.

In slide view, click Edit > Delete or click on the icon representing the slide, which are displayed on left hand upper corner of the window and press delete.

***Changing of fonts on all slides:***

Click Format > Replace Fonts (Choose from the options) > OK

***Aligning text:*** Click Format> Alignment (Choose from the options) > OK

***To add text:*** Click Insert > Text box. Click and drag on the slide. To add chart: Click Insert > Chart

***To add a clipart****:* Click Insert> Picture > Clipart.

***To draw on slide:*** Drawing Tool bar is similar to that of what is in MS word and the method also is similar for its utilization.

***Major look change:*** So far we have been through editing and formatting of the slides

on an individual basis. But to change the overall design of the presentation for a better appearance and effectiveness may sometimes be called for. In that case PowerPoint offers these changes to be effected without much fuss.

***Applying a Design:***

Click Format > Apply design (click on the options to get the preview) > Apply

***Changing the color scheme:*** PowerPoint offers only few options in the color scheme one for the background, one for the text and a set of colors for charts, (however the place holders have all the options available as that of in MS word).

Click Format > Slide color Scheme (Choose from the options) > Apply / Apply to all.

***Using a different background****:* Click Format > Background (Choose from the options) > OK

***Slide Show:*** To start and see how the presentation looks on a show,

Click View > Slide show, First slide in the presentation is displayed. Either click on the screen or press Space Bar to go to the next slide. At the end of the sown PowerPoint reaches to last view we were in.

***Adding Transition effects:*** Presentations to make it further effective, by inducing special effects to the slides at the time of their appearance on the screen.

Click Slide Show > Slide Transition (Choose from the options and preview) > Apply

***Creating Speaker Notes:*** During the presentation one might need to have some notes to speak about the particular slide, which can be created in PowerPoint having reference of the slide, without any mix-up.

Click View > Notes Page: Notes page is displayed. Type the notes and click on the next slide and type the text. Repeat the some until you have finished.

### 29.3.3 Power Point Presentations

PowerPoint presentation has many uses for an educator. For example

PowerPoint presentation is made to accompany an oral presentation. If the goal is to print out the slides, you might as well use word processing software. Note that you may decide to print out the slides (without background color) and create overhead transparencies as a backup, however, on most occasions, you won't be printing, you'll be presenting. This raises the issue of how best to present these slides. You basically have three choices, and I'll present them in order of cost, cheapest to most expensive.

**Projecting to a Television Screen**

Projecting to a television is the least expensive option. A projection box and a television are all that you need. Most schools have multiple televisions, some even on carts for ease of movement and sharing.

When using this system, you will want to think about the placement of the television and student seating arrangements. One television in a room offers good viewing for those seated within 10-12 feet of it. In most classrooms, many students sit farther away than that, so you might want to allow them to move up to watch your presentation. Also, a television mounted too high on the wall, does not offer a good viewpoint for students.

To go from the computer to the television, all you have to do is this:

Connect the Focus box to the back of the computer and to power. Connect the cord to the TV into the Video-In plug. Push the Input button on the television. Now what's on the computer screen will appear on the television. So what are the advantages and disadvantages of this system?

**The Pros:**

The cost: You need not spend much on Slide presentations that are mostly graphic images show up very well on a television. Slide shows with a few, large sized words show up well too.

**The Cons:**

Slides with lots of writing do not show up well at all. Words can look somewhat fuzzy. In going from the computer screen to the TV screen, you sometimes lose three edges of slides-particularly the bottom edge. So you have to create slides with that awareness.

**Projecting with an LCD Panel**

An LCD panel connects to a computer and sits on top of an overhead projector. So, this option lets you project to a large screen. To use an LCD panel, do the following:

Set the panel on top of the overhead projector. Plug into power both the panel and the projector with a cable (included with the panel), connect the LCD panel to the back of the computer monitor. What you see on your computer is what is projected to the big screen. So what are the advantages and disadvantages of this system?

**The Pros:**

View work on a large screen. Good for slides high in either graphics or words

**The Cons:**

Fairly expensive, as school budgets go. The only way to size the screen is to move the overhead. Focusing is difficult. Just like on most overheads you've worked with, the top and bottom of the screen look fuzzy and only the center of the screen looks really in focus. The overhead doesn't have enough bulb power resulting in a dim screen. You have to get the room dark with all the lights off and curtains closed.

**Projecting with an LCD Projector**

Using an LCD projector is the best way to showcase your PowerPoint slides. However, as you might expect, it is also the most expensive. The good news is that these projectors are getting better and better and that the price is going down, as with most technology products. To use an LCD projector, all you need to do is this:

Connect the projector to power. Connect the projector to the back of the computer monitor, using a cable included with the projector. Special attachments for PC or Mac are included. What you see on the computer will be projected to the screen.

Be aware that these projectors will also display video, so there are cables included to connect a VCR to the projector. In fact, even on the less expensive models, you can connect up to two computers and two VCRs to one projector and bounce between then in a presentation. So what are the advantages and disadvantages of this system?

**The Pros:**

View work on a large screen. You can easily size the projection to match your screen size. The focus is a true one, from top to bottom of your slides. The projection is very bright. You can even have the lights on and the curtains open and still see the image. Obviously, if you have a less expensive model, it looks better with the darkened room. Depending on the quality of your projector, you can set up at the back of the room and project to the front, so students viewing it do not have to peer around equipment. You can show video, not just computer work.

**The Cons:**

Even the lamp replacement is expensive. You get up to 500 lamp hours out of one.

After a thorough planning and preparation of the PowerPoint slides, the rest lies with its presentation. A teacher has to give the proper background explanation before

teaching the concept. Then, while presenting the concept before the student, the PowerPoint slides could be synchronized. It becomes a very effective presentation with the use of an LCD Projector.

Following are the simple steps that you have to follow while doing PowerPoint presentation:

1. Select 'PRESENTATION VIEWER'.
2. Select 'COMPUTER' & browse for the required file.
3. Select the file & click 'VIEW'.
4. The file will be projected on screen. You may control your presentation using your
5. Laptop/Notebook.
6. At the end of presentation, click 'END SHOW'.
7. Press 'OFF' on the keypad.
8. Thank you for your cooperation.

The movement of slides could be in two different types. Like you may fix time-limit, say once in two minutes, the slides successively change themselves or, you can manually control the slide change by mouse operation or by a remote controller. In both the cases, the rate of explanation and the PowerPoint slides show should have an appropriate co-ordination. And you have to keep one thing in your mind that, the class should have the interaction also. It should not be a passive one-way communication. You can use the magnified, projected diagrams or tables or any statistical points, on the white screen, very effectively. Mean while students also can jot down the points or take down.

**'Check Your Progress'-3**

1. The first step in the preparation of PowerPoint Slides is …….
2. The three types in creating PowerPoint Slides are .....and……..
3. The steps to be followed to delete a slide are …… and……..
4. A thumbnail Slide Sorter View entire presentation of LCD is given by ……...
5. PowerPoint Presentation becomes more effective by the use of an ……....

## 29.4 L.C.D. Projector- Meaning, Advantages

The LCD projector in the lab may be used for instruction there or may be used for presentations in the main Library or Library Classroom. Occasionally, it is moved to C-3 for presentations as well. As a general rule, we do not use the projector in individual classrooms. We own only one, and it is usually need in the lab. Also, the lamp assembly is delicate and may shatter if the projector is moved while it's still hot (ie, between classes to other locations).

When using the projector either in the lab or the library, keep these tips in mind: The projector should be about 10-12 feet from the screen. Leg locks are on the front of the projector to adjust the level. Please leave the projector on the cart and move it carefully. Also, please make sure that an adult moves and sets up the projector, not a student aide. (The projector costs Rs. 25,000 and lamp assemblies are around Rs. 20,000 each.)

***Side Panel***

The On/Off switch is located on the side of the projector. Also on the side, you will notice where one computer and one VCR are connected to the projector. There is room for one more of each, if you needed that much equipment.

When you turn on the projector, look at the panel on the top of the projector for the controls. Notice that the light beside the "On" indicator is amber. This means that the projector is on, but the lamp is on standby. To turn the lamp on for projection, press down on the standby button (right) until the amber light begins to blink green. The lamp will come on, warm up, and project to the screen.

The "Input" button allows you to select what you project-either a computer or video. By default, the system is set up to project the #1 computer in the lab. However, if you need to show a video, or part of one, turn on the VCR and then click on the input button until you get to video I and a blue screen. Then push Play, just like with normal VCR operation.

Notice that you may make the screen size larger or smaller and a focus button allows for easy adjustments. There are many Menus to look through, but the only one you will probably use is the Set Up Menu for volume, brightness, and contrast.

When you have finished using the projector, press the Standby button until the green light begins to blink amber. The lamp will go out immediately but the amber light will continue to blink and the fan will continue to blow until the projector has cooled itself sufficiently. This takes from 1-5 minutes, depending on how long the projector has been in use.

***Note:*** Do not turn the projector off until the fan has turned itself off. Then you can safely turn off the projector. If you turn it off prematurely, the excess heat remaining in the projector may blow up the lamp assembly.

**Advantages of LCD Projector**

LCD Projectors provided an immense help to a classroom teacher. It gives an option to have meaningful picture clippings in terms of PowerPoint presentation. Students get the main points very easily when it is presented through an LCD.

- A teacher can face the class and guide the students, what point / part of a diagram that they have to see on the screen.
- A projected diagram can be made still or moved off according to the need felt by the teacher as well as the students.
- LCD projectors are light weight, handy and easily portable.
- The projected items will have it pleasant brightness, good clarity and hence become attention catchy.
- Even any video cassettes also could be projected before the class, as it was just with the computers.

**‘Check Your Progress’ - 4**

1. LCD projection is ..... expensive

   a) Least b) Moderate c) Most d) None of the above

2. While using the LCD projector, it has to be kept ….. feet from the screen

   a) 5 to 10 b) 10 to 12 c)20to25 d)30to50

3. Even if you use the ‘stand by’ button after the projection work, the amber light continue to blink and the fan will continue to blow for about

   a) 1 to 5 minutes b) until the projector gets cooled

   c) 10 minutes d) None of the above

4. PowerPoint Presentation is made to accompany an …….. presentation

   a) Mass b) Classroom

   c) Oral d) All the above

5. A computer associated with an LCD makes the PowerPoint Presentation more

   a) Effective and efficient  b) Beautiful

   c) Interesting  d) All the above

## 29.5 Let Us Sum Up

Intervention of computers in the field of education is the 'MANTRA' of these days. Here one need not know the hardware part or software programming necessarily, but should know how to use that as an aid in teaching learning process. Computers are used in almost all sectors in the field of education. For classroom purposes, they are used for drill and practice, for simulation and games, as computer aided instruction etc,. A computer as learning aid gives a highly individualistic and the best quality of learning experiences. You may find many types of software but for teaching - learning purpose, it must be interactive software. Of course much has to be developed in this direction. Here most of the time, the courseware will be in the form of programmed instructions. Whereas for the presentation of information, PowerPoint slides are the most preferred one, PowerPoint slides have to be prepared based on proper planning and also should have a strong base of content analysis. This gets more impressive presentation through an association of LCD projector. Liquid Crystal Display (LCD), though quite expensive, is the best one for a classroom presentation. It is so felt because of its multifarious advantages.

## 29.6 Answers to 'Check Your Progress'

**'Check Your Progress' -1**

1. a) Individual Learning
2. d) All the above
3. c) Exposing students to modern technology and inculcating in them scientific approach to learning.
4. a) Programmed learning
5. b) Individualised instruction.

**‘Check Your Progress’ - 2**

1. c) The students and the subject matter
2. a) Software
3. b) Immediate Feedback
4. a) True
   b) True
   c) True
   d) False
   e) True

**‘Check Your Progress’ - 3**

1. Framing the Instructional objectives
2. Blank presentation, using templates and Auto content wizard
3. Slide view, Edit and delete or click on the icon representing the slide
4. Slide Sorter View
5. LCD

**‘Check Your Progress’ - 4**

1. C) Most
2. b) 10 to 12 feet
3. c) Until the projector gets cooled
4. c) oral
5. d) All the above

## 29.7 Unit-End Exercises

1. What is meant by “Computers aided instruction”?
2. ‘Interactive software’ are of importance now-a-days Justify your answer
3. How will you develop the PowerPoint slides? Explain in detail.
4. What is LCD? What are its advantages?

## 29.8 References


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# UNIT- 30 ❐ CO-CURRICULAR ACTIVITIES AS INSTRUCTIONAL AIDS

## Structure



## 30.1 Introduction

'Co-curricular activities', as the term itself suggests, are associated activities, accompanied with the regular curricular activities. This implies that Co-curricular activities are not one and the same as the curriculum, but are essential and integral part of it. These activities supplement the regular curriculum. They fulfill the other non-academic or non-scholastic activities which otherwise would not take place at all. For the development of a balanced personality of the child both scholastic and non - scholastic activities play an equal role. So, in this unit you will come to know about the meaning, nature, and importance of Co-curricular activities. You will understand that co-curricular activities also are one more type of instructional aids. At the end, you come across the merits and de-merits of such activities.

As it is has already been explained co-curricular activities are the best supplementary programmes that compensate certain lacuna of a regular curriculum. However the line of differentiation between these two is very thin. Because each experience makes the child learn something or the other! A few decades back, the same concept was recognized by the term "Extra Curricular Activities". This was implying that "such activities are

of less importance" Hence the term has been replaced by "Co-curricular activities". Co-curricular activities contribute for the physical, social, moral, intellectual development of an individual. Especially these will play an immensely important role for the emotional development of the individual. These also influence in widening the knowledge, and cognitive development. Certain scientific hobbies, cultural talents, varieties of clubs, namely, science club, eco-club, nature club etc; are very well developed under a broader canopy what is known as Co-curricular activities.

## 30.2 Objectives

After studying this Unit you will be able to,

- Give examples for Co-curricular activities
- Justify the importance of Co-curricular activities as instructional aids
- List out the principles of organising Co-curricular activities
- Mention the types of Co-curricular activities
- List out the merits and demerits of Co-curricular activities

## 30.3 Co-Curricular Activities

Co-curricular Activities and Curricular activities are complementary to each other. Hence both of them focus on the benefit of the students. Co-curricular activities could be designed based on varieties of objectives. Some experts say that, co-curricular activities provide a fertile area to utilize the important and significant basic drives and energy to achieve the broader educational goals. By participating in these activities, students get prepared for a democratic society. These activities also help the students develop confidence and ability for self-direction and auto-guidance. It makes them learn 'co-operation'. It seems to be a very good means for developing interest in school activities in general and school in particular. This most significant output could be the development of a positive attitude for preserving as well as maintenance of law and order in the society. It is a very good forum for the identification and nurturing of any special talent among the students. Thus, co-curricular activities encompass a wider area without disturbing the regular curricular activities. However, these activities prove themselves more effective, if they are deliberately planned and executed. For this to happen one should know certain principles of organising co-curricular activities. Therefore, now let us list those principles one by one.

**Principles of Construction of Co-curricular Activities**

- The activities must bring out the integration of Curricular and Co-curricular programmes. So, that both of them become complementary and reciprocal to each other. That is to say, a co-curricular activity should not stand as an isolated piece from the regular Curriculum.
- If one or two periods are preserved for such activities, then it is better to show that in the regular time table itself.
- Co-curricular activities must be constructive and creative in their nature. It is true that, each and every student cannot participate whole heartedly with full commitment in all the types of co-curricular activities. But still a teacher should take care that, every student will participate actively in one way or the other, and no individual is denied. Otherwise it just becomes the show of one or two dominating students or dominating groups. This has to be avoided.
- While selecting and assigning different responsibilities for such activities, make use of democratic principles as well as the individual abilities of the students.
- Co-curricular activities must cater to the interest, abilities, and attitudes of the students. They must go in consonance with students' interest, competencies and attitudes.
- It is true that students will get more freedom in co-curricular activities. Hence a teacher must know that, his role will be just giving the directions and guidance; and all the rest should be by the students only. And he should take care that; each student will learn to perform the role of a leader as well as the role of a follower. They must learn the dignity of labour.
- While planning for novel co-curricular activities, began after thorough discussion, clarifications with the experts and concerned persons. You must be very clear with the objectives and method of its execution as well as its associated pros and cons.
- Any activities for their success, depend upon the administrative support. Hence the letter correspondence, documentation, maintenance of the budget - etc; have to be taken care off with due importance. It is not only the administrative support but also, a sort of supervision that makes a programme grand success. Hence, the authorities of the management and administrators have to take more responsibilities in this juncture.
- The activities that are conducted outside the school campus need more discipline and prior precautions and cautious arrangements.

- If you are sending competitors from your school to any “prestigious competitions”, then select the appropriate and suitable’ candidate based on his talent. As for as possible avoid the political pressure, or any other type of influences.
- Even co-curricular activities also, should be evaluated. Based on the results, rectify or eliminate the wrong steps and plan with more clarity for further co-curricular activities.

**‘Check Your Progress’ -1**

1. A few decades back the ‘co-curricular activities’ were termed as

   a) Curricular activities

   b) School activities

   c) Extra Curricular activities

   d) Teaching activities

2. Curricular activities and Co-curricular activities are ..... to each other

   a) Opposite

   b) Parallel

   c) Complementary

   d) Vertical

3. Special talents of the students are ..... through Co-curricular activities

   a) Identified and nurtured

   b) Neglected

   c) Hindered

   d) Suppressed

4. Co-curricular activities must be ……... in their nature.

   a) Destructive

   b) Distractive

   c) Constructive

   d) Non-creative

### 30.3.1 Co-Curricular Activities as Instructional Aids

You must not develop an impression that co-curricular activities occur at the peripheral level and do not lead to learning of the subject matter. In fact, there are considered as one of the best media of learning. They are used by the teachers as instructional aids. They can take any form of activities. It varies from school to school and year to year. Each school will perform a number of and a variety of co-curricular activities. It could be cultural activities, competitions, hobbies, field trips and excursions etc,. In all the activities, the main objectives will be educational as well as entertainment. It could be on AIDS, Environment or Computer awareness programmes. So, to understand their educational value, let us classify the Co-curricular activities and see their respective influence in imparting the instructions.

***Activities for physical development:*** NCC, Yoga - classes, sports, Indoor games and outdoor games - all these will help the students to learn co-operation, execute the responsibilities and much more than what could happen within the four walls of a class room.

***Activities for civic development****:* visits to civic institutions like the Gram Panchayat, Zilla Panchayat, Town Hall, etc; and celebrating national festivals like, Independence Day, Republic Day, Teacher's Day etc, and organising Students' self- government, mock parliament, mock court etc;

***Activities for aesthetic and cultural development****:* Folk dance, folk - songs, classical dance, organising exhibition and fancy dress - competition in all the above said activities, arranging drama or any cultural activities for benefit show will inculcate the cultural heritage as well as helping nature among the students.

***Activities for motor development:*** Spinning, weaving, tailoring, card-board work, basket making, flower gardening, kitchen gardening, leather work etc; will make them to learn as well as earn some thing as a monitory benefit.

***Activities to promote literary and educational value:*** Bringing out school magazine, debates, quiz programmes, panel discussion, special lectures, guest lecturers symposia - all these help immensely in developing literary and educational values.

***Activities that nurture healthy hobbies:*** Organising Photographers Club, Eco-Clubs, Science Clubs, Bird-Watching, etc;

***Multipurpose activities (or projects):*** Beautifying the school, village survey, city survey, running a dispensary in the school, running a post office, and organising annual celebrations with a wide variety of activities and functions lasting for a week or so.

We may sum up, therefore, that co-curricular activities cater to the development of the child's entire personality, draw out the latent powers of children varying temperaments and aptitudes supplement the academic work, socialise the pupil in the rich social milieu of school - society, and perform the real functions of education.

**Objectives**

- To achieve the welfare of the school
- To give citizenship training so that the students will become fit to live in the democratic society
- To develop the qualities of a good leader as well as a good follower.
- To develop harmony between the students and the teachers, among the students, and through this, developing "Our school" concept
- To integrate the co-curricular activities with the Curricular activities of the school

**Organisation:**

- Discuss the purpose of establishing a school government with all the students.
- Decide the structure of school administrative committee, number of members, designation and the mode of selection of discussing with the students.
- Construct the administrative committee
- Prescribing the rights and duties of members and office bearers of the administration committee.
- Decide the time and how many times the general body meetings should be conducted, how to execute the work, how it has to be documented, rules and by - laws of the society, and actions to be taken for the member who doesn't abide the rules of the society, deciding the activities that are to be conducted for the current year, how to lay down the principles, rules and regulation, if need arises, how these principles could get renewed etc;
- Design the mode of evaluation for the assessment of current year's activities.

**Clubs:**

A number of clubs can be started in the school. A co-operative clubs and school bank can be cited as examples here:

**1.** ***A Co-operative club****:* The club is meant for the development of 'Co-operation' among the students as it is the result of the co-operative movement. The club is used for buying stationery, books and other articles. Boys contribute the shares, and from there shares purchases of books etc; are made. The pupils work as salesmen. Regular meetings are conducted to decide the selling rates, the amount of new purchases, and the distribution of the work and the checking of accounts. At the close of the year, the dividends are shared. The society can also be registered by State Government.

**2.** ***School Banks:*** These teach children to save systematically and to spend conservatively as there is an incentive to saving and to invest wisely. A convenient spot in the school building is selected, banking hours are fixed, and the student accountants manage the bank work. The bank must be under the direct control of the headmaster. Honesty should be maintained. The bank should be attractive enough to stir the imagination of the pupils. It should not be too easy to deposit money, but not so easy to withdraw. But the entire procedure must be known to the pupils.

**3.** ***Photography and Motion Picture Club:*** May be started by some pupils for recreational purposes. The pupils may learn the use of an ordinary camera and a movie camera, and operating upon the documentary film machine. The pupils may arrange the display of document in the villages. Documentaries can be borrowed from the public relations office, state audio visual unit and the National Institute of Audio - Visual Education, Delhi. Nowadays DVD's and CD's of great academic value are available. We can choose the best among them for use.

4. ***School Publications:*** A varieties of publication could be brought out as school publications, let as have a look at some of them.

i) **News - bulletins** : Can be issued by the school weekly or monthly publishing news about the school (especially regarding sports, tournaments, athletics, debate and other activities) Humorous skits, cartoons and comments on local news can also find place in the same. The bulletin can be distributed among the pupils or displayed on the bulletin board. Arrangements can be made with the local newspapers for printing the news.

ii) ***School magazine:*** It is the chief literary organ of the school. It will contain literary contribution of the pupils (poems, stories, skits, play, tit-bits, etc). News about the school activities during the year, information about the functioning of the school, the results, the changes that take place from time to time and all other matters which will interest parents, public and higher authorities.

***Organisation:*** First editorial board has to be selected. This could be for various sections, like, English section, sports section etc. For such students editors, the teaching staff (one or two) i.e. staff - editors will give guidance and directions. Guidance must be given to the students as to what type of contributions will be accepted, and in what manner they should write. The editorial board should not only select the best, but also correct the language and the material also, so as to make the same presentable. Care must be taken that the magazine works as the publication of the pupils and not merely of the staff. The editorial should give an appealing introduction about the school. The magazine must accommodate contributions of as many pupils as possible. Proof reading must be done and the printing mistakes must be avoided. All illustrations and snaps must be imposing and colourful. The magazine must be distributed among the pupils, and also presented to the higher authorities and prominent public men who are connected with the school. Few copies have to be kept in the library section for the documentation purpose.

**'Check Your Progress' - 2**

1. State whether the following sentences True / False:

a. Co-curricular activities do not help in teaching process

b. Co-curricular activities have both educational as well as entertainment values.

c. "School Government" activity leads to the development of "our school" concept among the students.

d. Sports and athletics activities must be optimized in a school programme.

e. Music, dance and other cultural activities in no way help a student to pass the exam - so, they must not be encouraged.

### 30.3.2 Merits and De-Merits

As you know it, co-curricular activities and their success, highly depends on correct planning and systematic execution with a good organisation. Hence subjected to situational factors or any other conditions, these activities are also not free from their merits and demerits. So, let us focus on this point now.

**Merits:**

The advantages of co-curricular activities are varied and numerous. Their educative

functions are so important and necessary that we cannot do away with them. For example,

- ***They promote physical development of the students*** by providing a useful channel for the superfluous energy of the pupils. For this, sports, athletics, games are suggested.
- ***They meet the psychological needs of the pupils*** Like, they act as agents for the sublimation of the instincts. They train their emotions. When a variety of activities are presented, every pupil can find some or other activity that suits his interest and aptitude.
- They help in the development of qualities of leadership as well as qualities of a follower. They promote civic value among the students.
- The social value, aesthetic value, the cultural value and the recreational value all these could be inculcated very well through co-curricular activities.

***Demerits:***

A number of defects in the organisation of these activities have been noticed, they nullify the very purpose of these activities.

- It depends upon suitable facilities, like 'lack of equipment', may make a programme hopeless. No progamme of activities can succeed- without proper equipment and provisions. Some schools have no play ground, no space for indoor games etc;
- Lack of variety: This may be another limitation. Some schools organise the activities that are the same and repeated. For example, one annual function, one tournament and an occasional competition.
- Lack of pupil participation: It is a common observation that majority of the pupils do not take part in their activities. It is because of lack of interest, proper motivation and encouragement by the staff.
- Lack of adequate staff: Some schools do not possess a full strength of staff even for academic work, with the result that the sole burden of organizing there activities falls on the existing staff. The staff members naturally try to shirk work and avoid the responsibilities.
- Over emphasis on examination is yet another factor which playa dominating role in weakening the strength of co-curricular activity.

**'Check Your Progress' - 3**

1. Mention any two merits of Co-curricular activities.

2. Mention any two de-merits of Co-curricular activities

## 30.4 Let Us Sum Up

Co-curricular activities were termed as 'extra-curricular activities" - a few decades ago. But now, these have become an integral part of the curriculum and hence term 'Co-curricular' activities. By giving this term, we have accepted its existence more positively, with its educational as well as recreational value. Most of the time these are utilised as the best instructional aids also. That is why, curricular and co-curricular activities are said to be complementary to each other. Co-curricular activities could be designed based on varieties of objectives. This has to satisfy the principles of construction or organisation of co-curricular activities. These activities facilitate the physical development, psychological development, civic development aesthetic and cultural development, motor development, among the students. They also promote literary and educational values.

Co-curricular activities could be of any type, like, for example, a trip, field visit, arranging and conducting different competitions, like, quiz, cultural competitions etc; A school government, different clubs with some purpose etc; could be established. A magazine could be brought out from the school. So, in this way co-curricular activities have encompassed a wide educational area, and hence are suitably recognized as "instructional aids". However, there activities have to be deliberately planned and executed. Some of the plus points of such activities can be considered as merits, namely, promoting physical development of the students, emotional development, developing

leadership qualities and confidence among the students. As it is they may not pose any demerits, but certain other factors may make them to appear defective, like lack of varieties in co-curricular activities, lack of interest among the pupils, hence passive participation or nil participation, lack of motivation and encouragement from the staff, over emphasis on examinations, etc; may weaken the strength and effectiveness of the co-curricular activities.

## 30.5 Answers to 'Check Your Progress'

**'Check Your Progress' - 1**

1. c) Extra - curricular Activities
2. c) Complementary
3. a) Identified and nurtured
4. a) Constructive
5. b) Democratic Principle

**'Check Your Progress' - 2**

a) False

b) True

c) True

d) False

e) False

**'Check Your Progress' - 3**

1. Any two merits of co-curricular activities are to be written from section 30.3.2
2. Any two de-merits of co-curricular activities are to be written from section 30.3.2

## 30.6 Unit-End Exercises

1. What is meant by "co-curricular activities"?
2. Give two examples for co-curricular activities and explain them in detail.

3. Explain the importance of co-curricular activities as instructional aids.
4. What are the principles that govern the construction of co-curricular activities?
5. List out the merits and demerits of co-curricular activities.

## 30.7 References


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