

Concept of ICT

Meaning & Definition

ICT is technology that supports activities involving information. Such activities include gathering, processing, storing and presenting data. Increasingly these activities also involve collaboration and **communication**. Hence IT has become ICT: information and communication technology.

Some underlying principles

Technology does not exist in isolation

- ICT contributes at various points along a line of activity
- ICT is used in activities – the ICT use depends on the activities
- The key outputs of educational activities are context are knowledge, experience and products
- The output should be useful to the users (self and others)

What is a useful concept of ICT?

It depends on the local culture and the particular ICT available and how it is configured and managed. The understanding, management and configuration of the available technology might vary the concept of ICT from

- a collection of tools and devices used for particular tasks, eg, publishing, course delivery, transaction processing...
- an organised set of equipment (like a 'workshop') for working on information and communication
- components of integrated arrangements of devices, tools, services and practices that enable information to be collected, processed, stored and shared with others
- components in a comprehensive system of people, information and devices that enables learning, problem solving and higher order collaborative thinking, that is, ICT as key elements underpinning a (sharable) workspace.

Creativity or Productivity?

Stephen Heppell of **Ultralab** proposes a set of dimensions for considering these two orientations.

Creativity	Productivity
quality assurance	quality control
learning tools	teaching machines
standards	Standardisation
participative (people)	interactive (ICT)
creative	Predictable
building community	delivering content

Stephen also reports that using ICT to support creativity is commonly found in small, democratic, high value economies focused on smartening up. Conversely economies that are large and low value (focused on minimising costs including labour costs) tend to be focused on using ICT to support productivity (at least in the short term).

Lets focus on the three words behind ICT:

-INFORMATION
-COMMUNICATIONS
-TECHNOLOGY

A good way to think about ICT is to consider all the uses of digital technology that already exist to help individuals, businesses and organisations use information.

ICT covers any product that will store, retrieve, manipulate, transmit or receive information electronically in a digital form. For example, personal computers, digital television, email, robots.

Information and communication technology (ICT)

Information and communication technology, or ICT, is defined as the combination of informatics technology with other, related technologies, specifically communication technology.

In this book, these three definitions have been collapsed into a single, all encompassing, definition of ICT. This definition implies that ICT will be used, applied, and integrated in activities of working and learning on the basis of conceptual understanding and methods of informatics.

Aims & Objective

Information and communication technology (ICT) has become, within a very short time, one of the basic building blocks of modern society. Many countries now regard understanding ICT and mastering the basic skills and concepts of ICT as part of the core of education, alongside reading, writing and numeracy.

UNESCO aims to ensure that all countries, both developed and developing, have access to the best educational facilities necessary to prepare young people to play full roles in modern society and to contribute to a knowledge nation. Because of the fundamental importance of ICT in the task of schools today, UNESCO has previously published books in this area as a practical means of helping Member States: for example, *Informatics for Secondary Education: A Curriculum for Schools (1994)* and *Informatics for Primary Education (2000)*. Rapid developments in ICT now demand a completely new document in place of the first of these publications.

This book has two key purposes. The first is to specify a curriculum in ICT for secondary schools that is in line with current international trends. The second purpose is to outline a programme of professional development for teachers necessary to implement the specified ICT curriculum successfully.

9

ICT AND EDUCATION

All governments aim to provide the most comprehensive education possible for their citizens within the constraints of available finance. Because of the pivotal position of ICT in modern societies, its introduction into secondary schools will be high on any political agenda. This book gives a practical and realistic approach to curriculum and teacher development that can be implemented quickly and cost effectively, according to available resources.

The curriculum is designed to be capable of implementation throughout the world to all secondary age students. The programme of teacher professional development relates closely to the ICT curriculum, and particularly to the stage of development that schools have reached with respect to ICT.

CURRICULUM AND TEACHER DEVELOPMENT

Keeping pace with technological development and the changing competencies required of both students and their teachers requires a state-of-the-art curriculum and appropriate teacher development.

Professional development for teachers

Teachers need to be adequately prepared to implement a state-of-the-art ICT curriculum. Indeed, introducing any new curriculum calls for careful preparation, management, resourcing, and continuing support. In the case of an ICT curriculum, even more concerns have to be considered. Educational research studies show that programmes of professional development for teachers are most effective if directed to the stage of ICT development reached by schools. The implications of these research findings are that teacher development is best conceived as an ongoing process, with many professional development activities conducted in schools.

Availability of resources

In any educational system, the level of available resources places a restriction on the degree to which any new subject can be introduced into the school curriculum, especially where only the most basic facilities have so far been provided. But ICT is of such importance to the future industrial and commercial health of a country that investment in the equipment, teacher education, and support services necessary for the effective delivery of an ICT-based curriculum should rank high in any set of government priorities. The curriculum proposed takes account of these resource issues and specifies minimum requirements for effective delivery in different circumstances. Information and communication technology, or ICT, is defined as the combination of informatics technology with other, related technologies, specifically communication technology.

In this book, these three definitions have been collapsed into a single, all encompassing, definition of ICT. This definition implies that ICT will be used, applied, and integrated in activities of working and learning on the basis of conceptual understanding and methods of informatics.

13

ICT AND EDUCATION

14

STAGES OF TEACHING AND LEARNING

Teaching and learning are best thought of, not as separate and independent activities, but rather as two sides of the same coin, interconnected and interrelated. Studies of teaching and learning in schools around the world identify four broad stages in the way that teachers and students learn about and gain confidence in the use of ICT. These four stages give rise to the model depicted in Figure 2.2 that shows the stages in terms of discovering, learning how, understanding how and when, and specializing in the use of ICT tools.

Discovering ICT tools

The first stage (Stage A in Figure 2.2) that teachers and learners go through in ICT development is of discovering ICT tools and their general functions and uses. In this discovery stage, there is usually an emphasis on ICT literacy and basic skills. This stage of discovering ICT tools is linked with the emerging approach in ICT development.

Characteristics

CHARACTERISTICS OF SCHOOLS RELATED TO ICT DEVELOPMENT

Along with approaches to ICT development noted above, there are various characteristics of schools, or aspects of school leadership, that relate to a school's progress in ICT development. Below are general descriptions of the

more important of these characteristics of schools that have an effect on ICT development within schools.

Vision

Vision refers to the aspirations and goals of both individuals within a school and the school system as a whole. As the school advances, the mission statements should become clearer and provide a basis for decision-making. Mission statements should help individual members of the learning community visualize a school's aspirations for the future and act in harmony.

Philosophy of learning and pedagogy

Ways in which teachers and students interact and how the school is managed for learning are part of what is meant by a school's philosophy of learning and 3

ICT DEVELOPMENT AT THE SCHOOL LEVEL

24

ICT IN EDUCATION

A CURRICULUM AND PROGRAMME OF TEACHER DEVELOPMENT

These philosophies will necessarily characterize the ways in which ICT is incorporated into a school. A setting that is dominated by the teacher as the main provider of subject content is adopting a teacher-centred philosophy. The teacher controls the use of ICT in such a setting as well. A learner centred philosophy, by contrast, describes a setting where content comes from a variety of resources, and where projects are chosen and designed by the students.

ICT tools and resources are selected by students in ways that match the aims of a project best. These contrasting approaches to pedagogy are sometimes referred to as instructivist and constructivist respectively.

Development plans and policies

How a school's vision and teaching philosophies are carried out is translated into development plans and policies. In the detailed steps of such plans and policies, goals and objectives are further defined providing interim and

long-term targets. Policies are set, a budget is allocated, facilities are determined, roles are defined, tasks are delegated, and an evaluation plan is created to define the direction ICT development will take.

Facilities and resources

The learning environment in which ICT is used requires certain facilities and resources. Facilities include basic infrastructure such as electrical wiring, Internet access, lighting, air-conditioning, and space. Decisions on inclusion or lack of ergonomic design and choice of furniture impact not only on use of ICT, but also on the health and well being of users. Resources include various types of technological devices from computers with peripherals, video equipment, and specialized tools like digital microscopes. Further resources include various types of software, as well as traditional tools like books, videos, and audiotapes.

Understanding the curriculum

An understanding of the curriculum affects the progression of ICT in the curriculum in following various stages of development. First, is an awareness stage in which students become ICT literate with regard to what technology is available and how it might be used. Second, as students learn basic skills, they begin to apply various ICT tools to their regular learning assignments and projects. Third, as students become more capable and confident with ICT, they begin to integrate and overlap both subject areas and tools. Last, is the applied use of ICT in which students are now enabled to address larger, more complex, real-world professional issues.

Professional development of school staff

In parallel with the curriculum for students, there must be professional development of the staff within a school. The personal productivity and professional practice of teachers are enhanced with the use of ICT. First, is an awareness stage in which teachers and staff become ICT literate with regard to what technology is available and how it might be used. Second, as teachers and staff learn basic skills, they begin to apply various ICT tools to their regular tasks and projects. Third, as teachers and staff become more capable and confident with ICT, they begin to integrate and overlap both subject areas and tools.

Last, is a change in professional practice in which teachers are now enabled to design lessons to incorporate larger, more complex, real-world projects using ICT tools and resources. As ICT is introduced into school systems, there is a tendency to move from discrete skills training to reflective practice and integrative professional development. Budgetary allocation and provision for release time for teacher professional development seriously impact on the ability of a school system to incorporate ICT in a meaningful way.

Community involvement

Community involvement may include parents, families, businesses, industry, government agencies, private foundations, social, religious and professional organizations, as well as other educational institutions such as vocational schools and universities. Community involvement can come in the form of donations of equipment and resources, or may be in human resources provided for training and technical assistance. As a community contributes to a school, so the school can give back in many ways. For example, a school may

decide to provide community members with evening access to computer labs, or have students offer training to parents. The use of ICT provides an opportunity for a school and its students to interact with both local and global communities. Interaction may range from building web sites for community organizations, to sharing projects with remote schools.

Assessment

Assessment includes both assessments of students as well as overall evaluation of a school system, two aspects that are intricately interwoven. An improvement in the one should predicate an improvement in the other. Means of student assessment should reflect choices in learning pedagogy and an understanding of ICT in the curriculum. For example, in the emerging and applying stages of ICT, assessment may be linked to pencil and paper tests, whereas in the infusing and transforming stages project based portfolios may be more appropriate. Each part of a school system needs to be evaluated to determine its impact on learning. Assessment should inform practice and support the management of learning. Assessment should allow a system to determine whether outcomes have been met, and then reviewed and revised accordingly. Budget allocations, policies, and

procedures for ICT should match vision, teaching philosophies, and curriculum choices.

Co-operative Learning techniques

Cooperative learning is the instructional use of small groups so that students work together to maximize their own and each other's learning. Class members are organized into small groups after receiving instruction from the teacher. They then work through the assignment until all group members successfully understand and complete it. Cooperative efforts result in participants striving for mutual benefit so that all group members gain from each other's efforts.

Some Basic Cooperative Learning Strategies

1. Three-Step Interview

Form pairs of students. The teacher may ask students to read necessary matter beforehand

Step One: One student interviews another within specified time limits. Eg Topic 'Learning'. What is meant by learning? When does learning occur? Give an example of when learning does not occur.

Step Two: The two then reverse roles and conduct the interview again. Same questions or similar type of questions may be used

Step Three: In a learning team composed of two pairs, the students then share the highlights of the information or insights got from the paired interview.

2. Roundtable

Roundtable, a cooperative learning structure useful for brainstorming, reviewing, or practicing a skill, uses a single sheet of paper and pen for each cooperative learning group. Students in the group respond in turn to a question or problem by stating their ideas aloud as they write them on the paper. Team members are encouraged not to skip turns, but if their thoughts are at a standstill, they are allowed to say "Pass" rather than to turn the brainstorm into a brain drizzle. Thus, there is almost universal participation in Roundtable. Students, for example, could identify the characteristics of an effective leader or the attributes of terrorism before these topics are formally introduced. Comparing a student-generated list with those of the "experts," creates interest. In Roundtable, the multiple answers encourage creativity and deeper thinking.

3. Think-Pair-Share:

Think: In this activity the instructor poses a question, preferably one demanding analysis, evaluation, or synthesis, and gives **students** thirty seconds or more to think through an appropriate response. This time can also be spent writing the response.

Pair: After this "wait time," students then turn to partners and share their responses.

Share: During the third and last stage, student responses can be shared within learning teams, with larger groups, or with the entire class during a follow-up discussion.

4. Gallery Walk

Assign a topic to be studied by a group. Let the group depict their thoughts, understanding of the topic by means of a concept map. All groups put up their products for the rest of the groups to see. One spokesperson remains near the group's chart while the other members take a gallery walk to see what others have done. Queries will be answered by the spokesperson. The spokesperson role should be rotated so that no one is left without the stimulation of exploring the different student creations.

5. Jigsaw

The students in a history class, for example, are divided into small groups of five or six students each. Suppose their task is to learn about

World War II. In one jigsaw group, Sara is responsible for researching Hitler's rise to power in pre-war Germany. Another member of the group, Steven, is assigned to cover concentration camps; Pradeep is assigned Britain's role in the war; Meeta is to research the contribution of the Soviet Union; Tahira will handle Japan's entry into the war; Rachna will read about the development of the atom bomb. Eventually each student will come back to her or his jigsaw group and will try to present a well-organized report to the group. The situation is specifically structured so that the only access any member has to the other five assignments is by listening closely to the report of the person reciting.

6. **Circle the Sage-** Divide the class into teams of say 4 to 5 members. Select some students from the class who will be able to explain a concept to the students. Those students (the sages) stand and spread out in the room. The teacher then has the rest of the classmates each surround a sage, with no two members of the same team going to the same sage. The sage explains what they know while the classmates listen, ask questions, and take notes. All students then return to their teams. Each in turn, explains what they learned. Because each one has gone to a different sage, they compare notes. If there is disagreement, they stand up as a team. Finally, the disagreements are aired and resolved.
-

Note: Students will carry out any one co-operative learning activity in an actual classroom.

Activity No----- Activity : **Co-operative Learning** Class:-----

Type of Co-operative Learning technique:-----

-

Procedure:

Introspection:

Conclusion:

Implications: *Student-Centered:* Cooperative activities pair students together or place them within groups, allowing each individual student more time and opportunities to participate in the classroom discourse.

Thematic Instruction: Students' interests are addressed through thematic planning, especially if they have a voice in deciding the theme, and further participate in the design of cooperative activities around the theme that allow them to co-construct knowledge in a social environment.

Active Learning: Cooperative activities naturally get students up and interacting with their environment.

Cognitive Apprenticeship: Paired and group activities offer excellent opportunities for teachers to model specific methods or behaviors for their students.

Authentic Learning: Students who engage in cooperative learning practice social skills that will help them to succeed in real-life situations that require group collaboration

Retention: Students who have mastered some aspect of cooperative learning and are comfortable working with their peers experience the following benefits: Higher retention and achievement, development of interpersonal skills and responsibility, heightened self-esteem and creativity

Interaction: Students in cooperative learning groups acquire the skills necessary to interact successfully with peers in an environment that rewards respectful collaboration among students of all ability levels

Activity No ----- **Name of the activity:** Preparation of constructivism based lesson plan

Background of constructivism: Constructivism suggests that the learner is much more actively involved in a joint enterprise with the teacher of creating ("constructing") new meanings. Four epistemological assumptions of constructivist learning

1. Knowledge is physically constructed by learners who are involved in active learning.

2. Knowledge is symbolically constructed by learners who are making their own representations of action;
3. Knowledge is socially constructed by learners who convey their meaning making to others;
4. Knowledge is theoretically constructed by learners who try to explain things they don't completely understand.

A lesson plan for the topic Types of Motion using the 5 E Model

Level: Class Six

Learning Outcomes:

Cognitive: Concepts of different types of motion

Affective: Sense of moving in the right direction, Co-operation

Psychomotor: Construction of models using different kinds of motion

Objectives: Students will observe and describe the different types of motion

Stages of the 5 E Model:

1. **Engage:** Let students move on the school campus, around their homes and observe various objects in motion. Show a clipping of an amusement park and note the motion of various objects. On returning to the classroom let the students classify these movements into categories.
2. **Explore:** Divide the students into groups. Let them through collaborative approach prepare models of objects that they have seen and study how they move. For example a model of a swing will be prepared and studied to see how the swing actually moves. Does it move around one fixed point? Is the motion in a line? This is a very important phase because the students are formulating their own rules, sieving data, classifying after analyzing and making decisions on their own. Next let students prepare a model of something they have not seen but would fit into one of the categories identified in the

- previous stage. For example: they have not seen the earth moving but a model of a spinning earth or a rocket could fit into one of the categories.
3. **Explain:** In this stage let the students explain why they classified certain objects under one category. What common features did they see in their movement? Have students work to create definitions for each type of motion. The actual terms i.e linear motion or oscillatory motion will be supplied by the teacher.
 4. **Elaborate:** Let students come up with their own examples of the different kinds of motion. Give them some throw away material as sticks, paper, bottle stoppers, buttons, string, matchboxes etc and let them prepare a toy/ model that has moving parts. Hold an exhibition of the same.
 5. **Evaluate:** Test them for the concepts attained through a small test. Include a question like ‘What if there was no motion on the earth? Initiate a discussion ‘Motion causes displacement. Rate at which this displacement occurs is called velocity’. Discuss some effects of velocity eg velocity of winds, velocity of vehicles, velocity of shrapnel in a bomb. This helps to connect the topic motion with further topics as speed and velocity.

Implications:

1. Children learn more, and enjoy learning more when they are actively involved, rather than passive listeners.
2. Education works best when it concentrates on thinking and understanding, rather than on rote memorization. Constructivism concentrates on learning how to think and understand
3. Constructivist learning is transferable. In constructivist classrooms, students create organizing principles that they can take with them to other learning settings
4. Constructivism gives students ownership of what they learn, since learning is based on students' questions and explorations, and often the students have a hand in designing the assessments as well
5. Constructivist assessment engages the students' initiatives and personal investments in their journals, research reports, physical models, and artistic representations. Engaging the creative instincts develops students' abilities to express knowledge through a variety of ways. The students are also more likely to retain and transfer the new knowledge to real life

6. By grounding learning activities in an authentic, real-world context, constructivism stimulates and engages students. Students in constructivist classrooms learn to question things and to apply their natural curiosity to the world.
7. Constructivism promotes social and communication skills by creating a classroom environment that emphasizes collaboration and exchange of ideas. Students must learn how to articulate their ideas clearly as well as to collaborate on tasks effectively by sharing in group projects. Students must therefore exchange ideas and so must learn to "negotiate" with others and to evaluate their contributions in a socially acceptable manner. This is essential to success in the real world, since they will always be exposed to a variety of experiences in which they will have to cooperate and navigate among the ideas of others

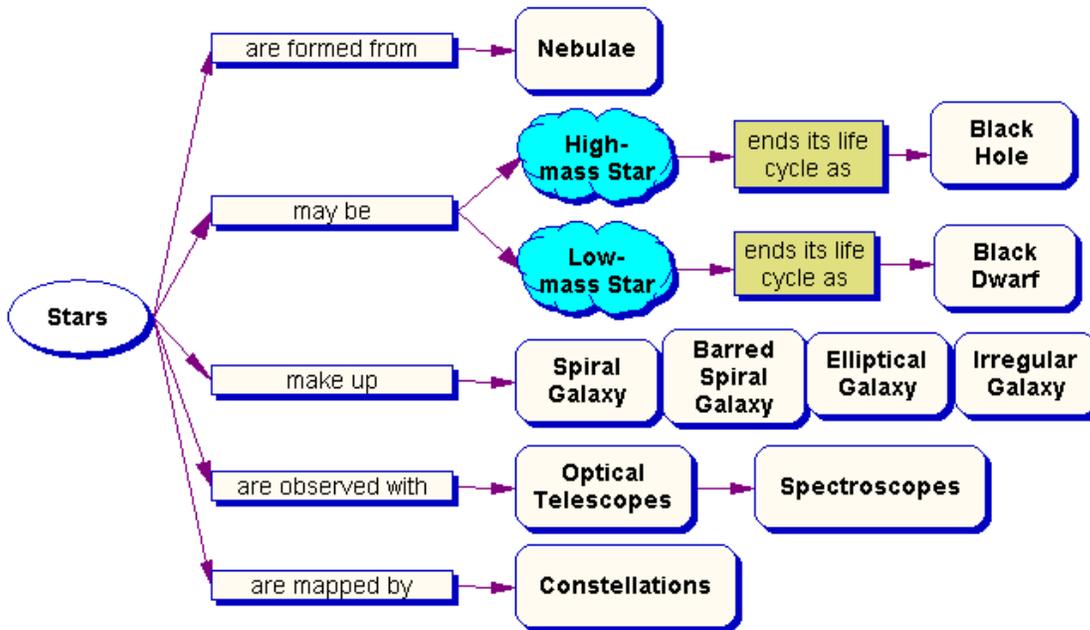
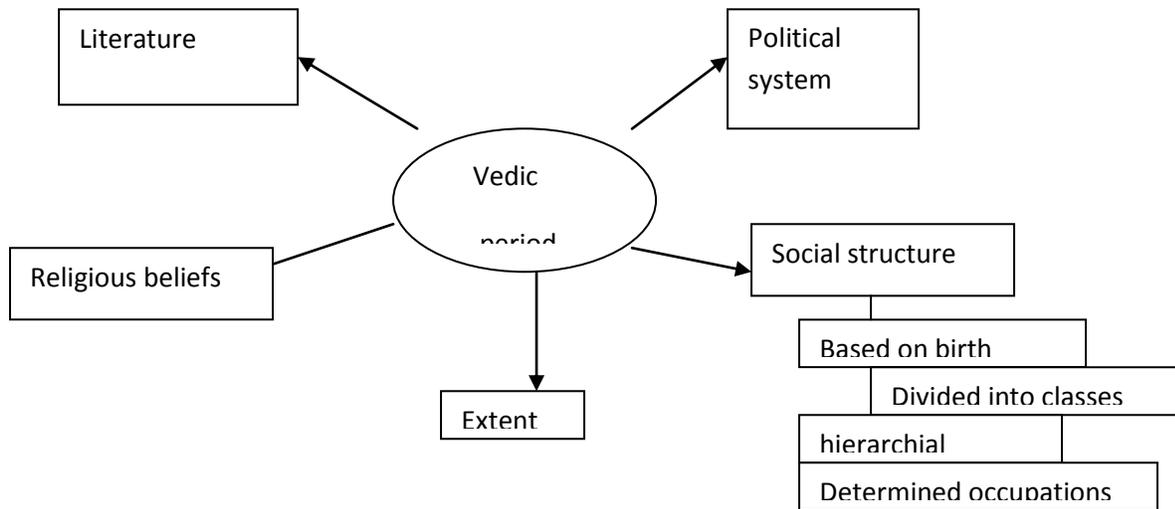
Please note in this case the 5 E model has been used. You are free to use any constructivist based activities in your plan.

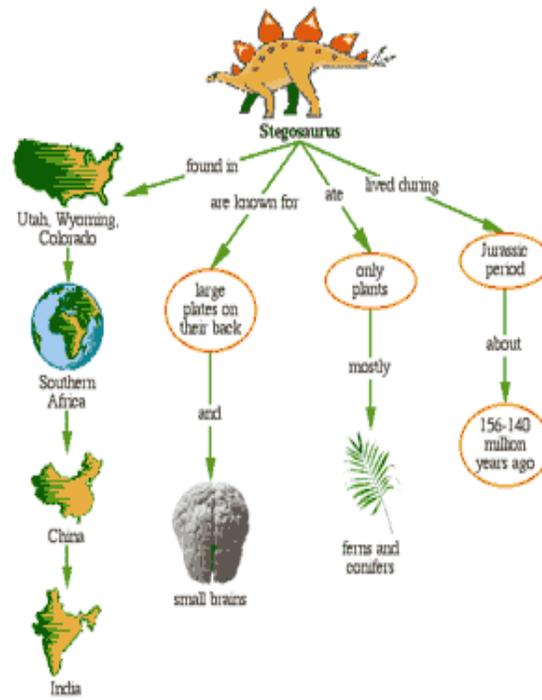
Activity No: **Activity:** Preparation of an Advanced Organizer

Background: An advanced organizer assists students with transferring or applying what they know to what they are learning. They help to clarify the big ideas that the students will be exploring, identify what students already know, and develop links between the two. Advanced organizers should give a preview of what is to come in the instruction. They should use familiar concepts/terms to relate to new concepts/terms. They should give distinctions in overall aspects before delving into the specifics.

Examples of advanced organizers: Venn diagrams, concept maps,

Some examples of concept maps that serve as advanced organizers are shown below





Educational Implications of Advanced Organizers:

1. Develop an understanding of a body of knowledge. Explore new information and relationships. Access prior knowledge. Gather new knowledge and information. Share knowledge and information generated. Design structures or processes such as written documents, constructions, web sites, web search, multimedia presentations.
2. Problem solve options.
3. Concept maps encourage understanding by helping students organize and enhance their knowledge on any topic. They help students learn new information by integrating each new idea into their existing body of knowledge.
4. Concept maps are ideal for measuring the growth of student learning. As students create concept maps, they reiterate ideas using their own words. Misdirected links or wrong connections alert educators to what students do not understand, providing an accurate, objective way to evaluate areas in which students do not yet grasp concepts fully.

5. Concept Maps are more compact than conventional notes, often taking up one side of paper. This helps associations to be made easily. Information that is acquired after the main Concept Map has been drawn can be easily integrated with minimal disruption.
 6. Concept Maps can also be used well to summarize information, to consolidate information from different research sources, to think through complex problems and as a way of presenting information that shows the overall structure of your subject. Concept Maps are also very quick to review - it is easy to refresh information in your mind just before it is needed by glancing at one.
-
-

Sociometric techniques

Any one of the following techniques is to be actually carried out in the classroom.

Guess who technique: Give a number of situations and ask students to list three names to fit the description. Eg A person always ready to help, someone who doesn't mind spending time explaining something we have not followed, some one ready to share his/ her notes with the class, a person who understands our needs etc. You can create a list to check on any trait. In the above example the trait of helping others is being probed. Lists can be prepared to probe any other trait as to check who is creative, who is friendly, who is troublesome, who picks fights easily etc.... Then tabulate results as

	Choice 1	Choice 2	Choice 3
A person always ready to help			
a person who understands our needs			

someone who doesn't mind spending time explaining something we have not followed			
some one ready to share his/ her notes with the class			

Assign points 3, 2 or 1 for choice 1, choice 2, and choice 3. Find the most helpful and least helpful person from the data.

Social Distance Scale:

Pick a group of about 5 students. A list of statements will, be read/ given to the group and each student has to assign points from 1 to 5 to the each member from the rest of the group. A score of 1 indicates least preference and 5 indicates most preference.

	Anuradha	Bharati	Chaya	Deepa
Would like as my friend	1	5	1	4
Would like to go group work with	2	5	1	5
Would like to sit on the bench with	2	5	4	3
Would like to spend time in the break with	2	5	2	4

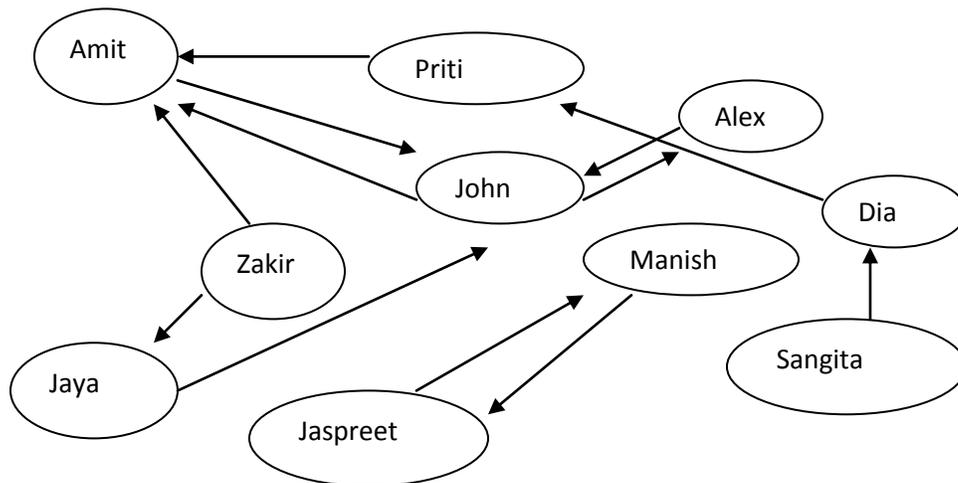
By adding everyone's responses for all statements one can find the students who are preferred and those who are rejects.

Sociomatrix: Select a group of 5 to 7 students. Give a list of names of group members. Give a situation example: "You have to do a group project". If you would like a student to be a member of your group put + if not put – and if you are neutral put 0. Collect all responses and form a matrix.

	Asha	Beena	Chaya	Dristhi
Asha	X	+	-	+
Beena	+	X	-	0
Chaya	+	-	X	+
Dristhi	+	0	+	X

From the above chart it is seen that Asha has been preferred by all girls. Chaya is rejected by most. Mutual pairs can be found. Total isolates, stars etc can be found.

Sociogram: A sociogram can be drawn to depict preferences of students. Identify the cliques, isolates, stars, rejects, mutual pairs in the group.



Activity No
Classroom

Name of the activity: Use of Sociometry in the

Background: A sociogram is a charting of the inter-relationships within a group. Its purpose is to discover group structure: i.e., the basic "network" of

friendship patterns and sub-group organization. The relations of any one child to the group as a whole are another type of information which can be derived from a sociogram. A sociogram's value to a teacher is in its potential for developing greater understanding of group behavior so that he/she may operate more wisely in group management and curriculum development.

Procedure:

Observations: here include the tables or the sociogram

Conclusions:

Implications:

1. Early identification of children likely to be experiencing social rejection and peer neglect is desirable
2. The patterns of friendship and rejection play an important role in determining how the group will react to learning situations, and to various types of group management techniques which teachers might wish to use. Understanding group structure is but a step toward studying group dynamics, and understanding group dynamics is a means to better group management and curriculum development.
3. To understand peer relationships
4. For a healthier socio emotional climate
5. To form teams that will be productive
6. To help social adjustment of students
7. To identify leaders and develop their qualities
8. To guide and counsel leaders , isolates and rejects

MODELS OF TEACHING

INTRODUCTION

MEANING

Main Postulates

TYPES OF TEACHING MODELS

Basis of the Model

What is Concept

What is Concept

- A concept consist of an individual organized information about one or more things, objects, events, ideas, processes or relations that enable the individuals to discriminate a particular thing from a class of things and also to related to other things or class of things.

Using a Concept

Any Concept has 5 Elements

NAMES

EXAMPLES

ATTRIBUTES

Attribute Nature

Concepts were formed in terms of

size, shape, weight etc.

RULE**Concepts exist at different levels****Concepts**

Visible	Non Visible
Ex – Horse	Ex - Kindness
Table	Justice
Man	Truth

Classification

- **Concept of things – eg. – dog, trees, table horse etc**
- **Concept of persons eg. – Teacher, mother, Russian, Indian**
- **Concept of qualities Eg. – Honesty, Truthfulness,**
- **Concept of relations Eg. – Small, big, high, low, congruent, similar**

Classification**Thus, our thinking process involves concept that represent.****General ideas about objects eg. – Trees, animals****Particular ideas about objects Eg. – Mango tree, Shrubs, vertebrates, Invertebrates****Classification****Concept is assumed to be**

A set of specific object

Symbols

A

Events

Which shares common

Characteristics and can be

particular name or symbol

Objectives of Concept Attainment Model

Concept Attainment Model

SYNTAX

Concept Attainment Model

Phase III

Analysis of Thinking Strategy

-Students describe thoughts

-Students discuss role of hypothesis and attributes

-Students discuss type and number of hypotheses

To sum up

Presenting data

Examples Positive and Negative

Compare

Justify

State the rule

SOCIAL SYSTEM

The Concept Attainment Model

Example

- **Concept is rectangle**
- **Four sides**
- **Contains all right angles**
- **Opposite sides parallel and congruent**
- **Geometric figure**

The Concept Attainment Model

Example

- **Positive Examples** **Negative Examples**

Recap

- **Introduction**
- **Meaning**
- **Types**
- **Concepts**
- **Concepts at different level**
- **Objectives**
- **Syntax**

MODELS OF TEACHING

INTRODUCTION

A Model for teaching is a pattern or plan, which can be taken up to shape or course to select instructional material and enable a teacher to pattern his actions.

Model of teaching is a blue print of the teaching activities.

MEANING

Joyce and Weil have defined the term Model in their book “Models of Teaching” as just instructional designs.

A way that specific change occurs in his behavior.

Main Postulates

- 1. Learning outcomes are written in terms of behavioral outcomes.**
- 2. The learning situation as specified for observing the students response.**
- 3. For creating the interaction between students and environment.**
- 4. The learning situations and teaching tactics can be improved and modified for the desirable change in students behavior.**

TYPES OF TEACHING MODELS

- The Information–Processing Model**
- The Personal Model**
- The Social Family Model**
- Behavioral Model**

Basis of the Model

Jerome Bruner

- **Constructivist learning**
- **Reception strategies**
- **Students who constructed their own knowledge retained it longer.**

What is Concept

A concept is mental presentation of some object or experience.

It is basic unit of information that represents a category.

It is considered both as a mental and a socially accepted meaning of terms that represents the particular concept.

What is Concept

- **A concept consist of an individual organized information about one or more things, objects, events, ideas, processes or relations that enable the individuals to discriminate a particular thing from a class of things and also to related to other things or class of things.**

Using a Concept

A Concept is used to :-

- **Identify newly encountered examples and non examples of the concept.**
- **Understand principles involved in a concept.**

Any Concept has 5 Elements

1. **Name**
2. **Examples**
3. **Attributes (Essential and non essential)**
4. **Attribute values.**
5. **Rule**

NAMES

The name is the term given to a category. Fruit, dog, government are the names given to a class of experiences, objects, configuration of process. Although the items commonly grouped together in a similar category may differ from one another in certain respects, are common features causing them to be referred to the same general term.

EXAMPLES

Refers to instances of the concepts, part of knowing a concept is recognizing positive instances of the concept and also distinguishing closely related but negative examples.

ATTRIBUTES

Are the common features.

In the case of fruit, the essential attributes are fleshy, seed enclosed, sweet or sour, edible and the cost of the fruit, not all the characteristics are essential to the concept.

We can refer to cost as a non – essential attribute to fruit.

The essential attributes from the non – essential ends.

Attribute Nature

Concepts were formed in terms of
size, shape, weight etc.

Concepts were formed in terms of

size, shape, weight etc.

RULE

Concepts exist at different levels

Concepts

Visible

Non Visible

Ex – Horse

Ex - Kindness

Table

Justice

Man

Truth

Classification

- **Concept of things – eg. – dog, trees, table horse etc**
- **Concept of persons eg. – Teacher, mother, Russian, Indian**
- **Concept of qualities Eg. – Honesty, Truthfulness,**
- **Concept of relations Eg. – Small, big, high, low, congruent, similar**

Classification

Thus, our thinking process involves concept that represent.

General ideas about objects eg. – Trees, animals

Particular ideas about objects Eg. – Mango tree, Shrubs, vertebrates, Invertebrates

Classification

Concept is assumed to be

A set of specific object

Symbols

A

Events

Which shares common

Characteristics and can be

particular name or symbol

Objectives of Concept Attainment Model

Concept Attainment Model SYNTAX

Concept Attainment Model

Phase III

Analysis of Thinking Strategy

- Students describe thoughts**
- Students discuss role of hypothesis and attributes**
- Students discuss type and number of hypotheses**

To sum up

Presenting data

Examples Positive and Negative

Compare

Justify

State the rule

SOCIAL SYSTEM

The Concept Attainment Model

Example

- **Concept is rectangle**
- **Four sides**
- **Contains all right angles**
- **Opposite sides parallel and congruent**

- **Geometric figure**

The Concept Attainment Model

Example

- **Positive Examples** **Negative Examples**

Recap

- **Introduction**
- **Meaning**
- **Types**
- **Concepts**
- **Concepts at different level**
- **Objectives**
- **Syntax**

OHP

- ⦿ Paper IV
- ⦿ Section I
- ⦿ Information and Communication Technology

Unit II

support media in ICT

Use , Advantage and Limitations of Support Media

An overhead projector is a variant of slide projector that is used to display images to an audience.

They are used to project and enlarge an image contained on a transparent sheet onto a remote screen for easy viewing.

Overhead projectors are old in the art but continue to enjoy widespread use in the fields of education and marketing.

Overhead projectors have been popular as a means of projecting prepared transparencies or free-hand transparencies that are drawn in real-time, on to a display screen for viewing by a group of viewers.

An overhead projector typically consists of a large box containing a very bright lamp and a fan to cool it.

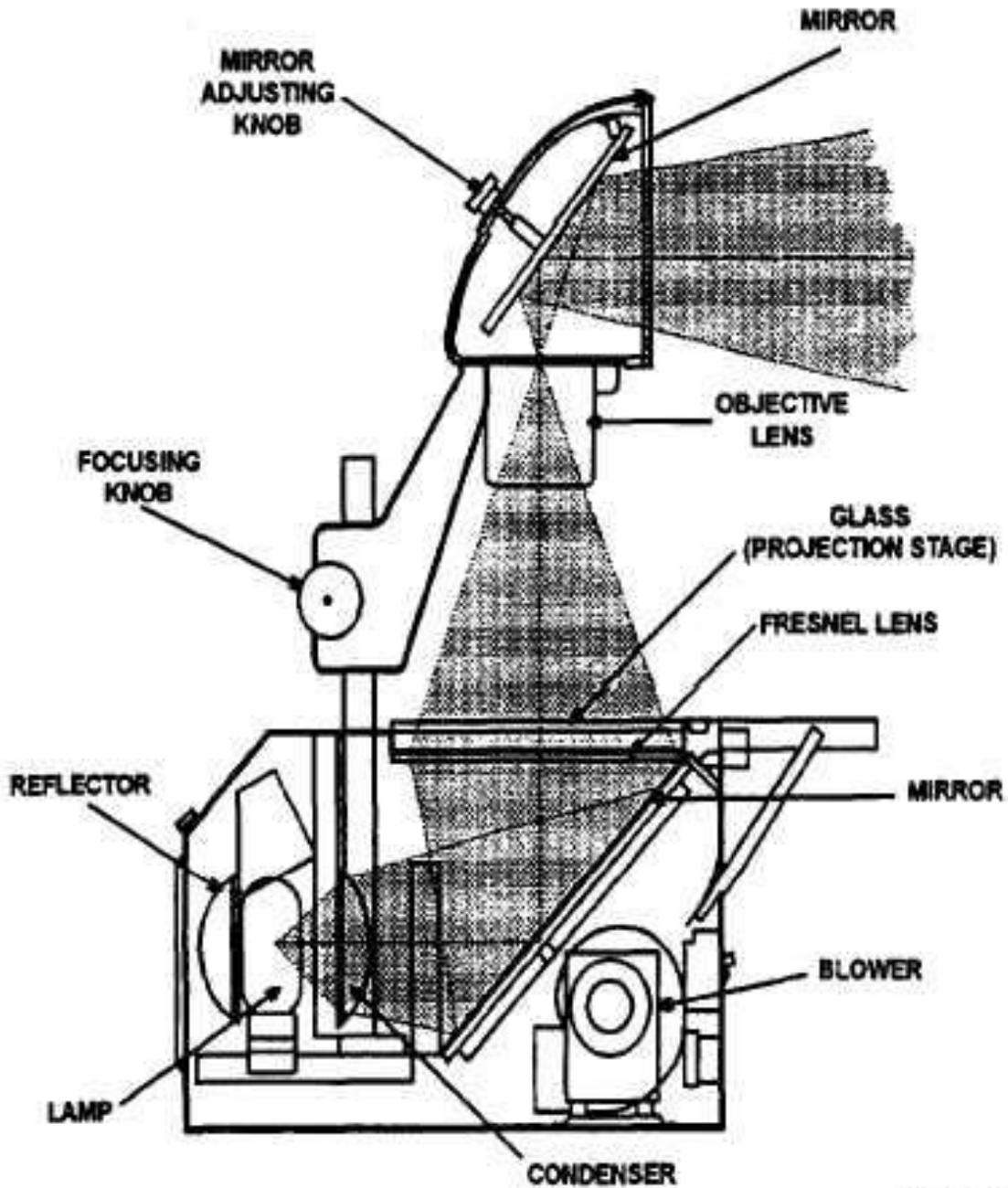
On top of the box is a large lens that collimates the light.

Above the box, on a long arm, is a mirror and lens that focuses and redirects the light forward instead of up.

Transparencies are placed on top of the lens for display.

The light from the lamp travels through the transparency and into the mirror where it is shone forward onto a screen for display.

The height of the mirror can be adjusted, to both focus the image and to make the image larger or smaller depending on how close the projector is to the screen.



DMNP0115

Better-quality overhead projectors offer an adjustment wheel or screw on the body of the projector, to move the lamp towards or away from the fresnel lens. When the mirror above the lens is moved too high or too low, it moves out of the best focal distance for an evenly white image, resulting in a projected image with either blue or brown color fringing around the outside edge of the screen. Turning the adjustment wheel moves the lamp to correct the focal distance and restores the all-white projected image.

History

The first overhead projector was used for police identification work.

The U.S. Army in 1945 was the first to use it in quantity for training as World War II wound down. It began to be widely used in schools and businesses in the late 1950s and early 1960s.

Use in education

The overhead projector facilitates an easy low-cost interactive environment for educators.

Teaching materials can be pre-printed on plastic sheets, upon which the educator can directly write using a non-permanent, washable color marking pen. This saves time, since the transparency can be pre-printed and used repetitively, rather than having materials written manually before each class.

The overhead is placed at a comfortable writing height for the educator and allows the educator to face the class, facilitating better communication between the students and teacher.

Strengths of the Overhead Projector

A lecturer can use it in just the same way that he or she would use a chalkboard, but the biggest advantage would be that with the overhead projector, lecturers all over the world now get to face the whole class and maintain eye contact all times with their students instead of having to turn around and write.

It is multi-purpose and can be used to present pre-prepared material, which enables lecturers to build notes, tables, diagrams, and so on., and these can be used anytime, repeatedly.

If designed well and planned well, these overhead transparencies will provide all the aides and cues that are needed during a lecture, so that you don't have to resort to the conventional note taking. These overhead transparencies are fairly compact when you compare them with some of the other types of visual aids like charts and can easily be stored in boxes, folders, files, or large envelopes.

It does not require a room to be darkened, so it allows students to take notes easily. It can also be used in any kind of room, except ones with extreme bright lights or in the direct sunlight.

The overhead projector is quiet, 'user friendly' and clean and requires no technical knowledge or skill on the part of the person operating it apart of course from the ability to change the lamps occasionally.

Weaknesses of the Overhead Projector

The drawbacks of the overhead projector include the basic fact that it requires a constant power supply and also requires a white flat surface on which its image can be projected.

Unlike marker boards and chalkboards, overhead projectors require a small amount of maintenance. They are more likely to crack or break, so you must be very careful and always keep a spare bulb close at hand.

Another disadvantage is that some teachers find the glare that is emitted from the overhead projector quite bothersome, even though this can be overcome by attaching a shade to the device.

Besides these hardware ‘glitches’, the basic problems that are associated with the overhead projectors arise from the fact that most users do not really provide enough thought or consideration to the production of their display material. The writing is generally too untidy or too small and can't be read easily, and apart from this it could also extend beyond the area of transparency.

Lastly, lecturers and teachers tend to overuse these projectors only because they are so convenient. They employ it in situations where, on other occasions, other visual aids would have been more effective.

LCD

A liquid crystal display is an electro-optical amplitude modulator realised as a thin flat display device made up of any number of color or monochrome pixels arrayed in front of a light source or reflector. It is often utilised in battery powered electronic devices because it uses very small amounts of electric power.

In the early 1980's and 90's OHP's were often used as a part of classroom computer display or projection system. A LCD panel mounted in a plastic frame was placed on top of the OHP and connected to the video output of the computer often splitting off the normal monitor output. A cooling fan in the frame of the LCD panel would blow cooling air across the LCD to prevent overheating that would fog the image.

The first of the LCD panels were monochrome only and could display NTSC output such as from an Apple II computer or VCR. In the late 1980's color models became available capable of thousands of colors (16 bit) for the color macintosh and VGA PC's. The displays were never particularly fast to

refresh and update, resulting in the smearing of fast moving images, but it was acceptable when nothing else was available.

PROGRAMME LEARNING

- **Programmed learning**

Programmed learning has been announced as a revolution in educational techniques.

Programmed learning has a long past but only a short history.

- **Historical background:**
 - **1. Contribution of Socrates: Socrates was one of the earliest programmers who developed a program in Geometry. This was recorded by Plato.**
 - **2. Contribution of S.L. Pressey : In Ohio University S.L.Pressey (1926-27) was first to devise a machine which could teach as well as test.**
- **Historical background:**

B.F. Skinner's contribution: Programmed learning got historical momentum only after the publication of Skinner's paper "The Silence of Learning and the Art of Teaching" in 1954.

- **Concept of Programmed Learning**
 - **Programmed learning represents a highly individualized and systematic instructional strategy for class-room instructions as well as self-learning.**
 - **Concept of Programmed Learning**

Harold W. Bernard's view: “Programmed learning refers to the arrangement of instructional material in progressive sequences”.

View of Espich and Williams: “Programmed instruction is a planned sequence of experiences leading to proficiency, in terms of response relationship that has proven to be effective”.

-

Characteristics of Programmed learning:

- **1. Individualized instructions**
- **2. Logical sequence of material**
- **3. Interaction between the learner and the program**
- **4. Immediate knowledge of results**
- **5. Organized nature of knowledge**
- **6. Learner's own speed**

-

Fundamental Principles of Programmed Learning

- **1. Principle of small steps**
- **2. Principle of active responding**
- **3. Principle of immediate confirmation**
- **4. Principle of self-pacing**
- **5. Principle of evaluation**

-

Styles of Programming (Types of program)

- **1. Linear Programming**
- **2. Branching Programming**
- **3. Mathetics**

- **4. Computer-assisted instruction**
- **5. Learner-controlled instruction**

-

Linear or extrinsic style of programming

The linear style of programming was developed by Skinner and his associates(1954).This is also known as the Skinnerian style of programming. The techniques associated with this style of programming are based on the principle that the learner's original response should be gradually altered or shaped until he meets some standard of acceptable performance.

-

Basic assumptions of linear programming:

- **1. Activeness**
- **2. Small units**
- **3. Immediate reinforcement**
- **4. Psychological arrangement of a contents**
- **5. Freedom**
- **6. Hindrance by errors**

-

Features or advantages of linear style of programming:

- **1. Linear arrangement**
- **2. Small steps**
- **3. Controlled responses**
- **4. Response is emphasized**
- **5. Structural responses**

- **6. Active responding**
- **7. Immediate feedback**

-

Limitations of Linear Style of Programming:

- **1. Lack of motivation**
- **2. No freedom of choice**
- **3. No development of discriminative power**
- **4. Encouraging guess work**
- **5. Serial order learning**
- **6. Difficulty in finding background**

-

Branching or intrinsic style of programming:

Branching program may be produced for use on a teaching machine or in a book form. The book form is known as a ‘scrambled text’ because the pages do not follow in a normal sequence.

- **Assumptions of Branching Program:**
- **1. Needs of the learner**
- **2. Wholeness of the content**
- **3. Meaningful units**
- **4. Analysis of the task**
- **5. New material**
- **6. No hindrance by errors**

-

Techniques in Branch Programming (types of branching):

1. Backward branching**2. Forward branching**

-

Principles of branching program:

- **1. Principle of exposition**
- **2. Principle of diagnosis**
- **3. Principle of remediation**

-

Advantages of branching program:

- **1. Based on traditional tutorial method**
- **2. Individualized instruction**
- **3. Larger frame**
- **4. Multiple choice questions**
- **5. Freedom to choose path**
- **6. Alertness of learners**

-

Limitations of branching program:

- **1. Guessing**
- **2. Difficulty in multiple choice questions**
- **3. Difficulty in arranging the branching sequences**
- **4. Unfeasibility of infinite branching**
- **5. Not suitable for small children**
- **6. Inability to control the student**

E-Learning

DEF

E-learning refers to the delivery of learning, training or education program by electronic means.

E-learning refers to using electronic applications and processes to learn.

E-learning is a type of education where the medium of instruction is computer technology.

“E-learning refers to learning and other supportive resources that are available through a computer.” Some of the definitions of online learning include other means than a computer (interactive television), others do not.

“E-learning is about information, communication, education and training. Regardless of how trainers categorize training and education, the learner only wants the skills and knowledge to do a better job or to answer the next question from a customer.”

Tom Kelly, Cisco:

“Instruction that is delivered electronically, in part or wholly via a Web browser, through the Internet or an intranet, or through multimedia platforms such CD-ROM or DVD.”

Brandon Hall

“E-learning covers a wide set of applications and processes such as web-based learning, computer-based learning, virtual classrooms and digital collaboration. It includes the delivery of content via the Internet, intranet / extranet, audio and videotape, satellite broadcast, interactive TV and CD-ROM.”

“E-learning refer to the use of Internet technologies to deliver a broad array of solutions that enhance knowledge and performance.”

E-learning applications and processes include Web-based learning, computer- based learning, virtual classrooms and digital collaboration.

Content is delivered via the Internet, intranet/extranet, audio or video tape, satellite TV, and CD-ROM.

The use of processes and technologies to create, distribute, manage and enable learning via electronic network.

Characteristics:

- Delivery of the digital content is the main character of e-learning.
- E-learning involves the use of a computer or electronic device (e.g. a mobile phone) in some way to provide training, educational or learning material. It Covers wide range of Instructional materials like, CD-ROM, DVD, Internet (WAN), Intranet (LAN), Web based facilities, etc.
- “E-learning provides the potential to provide the right information to the right people at the right times and places using the right medium.”
- Provides a learner-orient environment for the teachers and students.
- E-learning focuses on the broadest view of learning: learning solutions going beyond the traditional paradigms of training.
- E-learning is networked, instant updating, storage and retrieval, distribution and sharing of information is therefore possible.

Types of e-learning

1. Online learning

Synchronous e-learning: Communication occurs at the same time between individuals and information is accessed instantly. For example, real time chats, audio or video conferencing. It is the real time communication.

Trainers and trainees do not meet physically, but by using for example a video conferencing system a course is given or students are able to ask questions.

Asynchronous e-learning. It is the learning in distance in time where Trainers and trainees never meet. For example, courses are distributed via the internet and communication via e-mail only for

example, taking a self-paced course, exchanging e-mail messages with a mentor and posting messages about a topic to a discussion group.

WWW

World wide web is the computer based network of information resources that a user can move through by using links form one document to another.

Information on the WWW is spread over computers all over the world. It is that portion of the Internet that uses linking HTML pages. Is a collection of text, pictures, sounds, video clips, graphics and other information arranged in pages and linked together via the internet.

A client-server software package which uses hypertext to organize, connect, and present information and services throughout the Internet. A hypertext-based system for finding and accessing Internet resources.

Is a system of pages composed of graphics, sound, text and user input linked together via the Internet. It is part of, but by no means the only part of, the Internet.

Discussion forum:

An area within a Web site where an internet user can discuss any aspect of a particular with other online users around the world.

Chat:

It is a synchronous, text-based communication via computer between two or more people, typically in real-time. Electronic mail is generally not considered chat, because it is not two people writing back and forth in conversation simultaneously people in online chat sessions type messages to each other using their keyboards. The message then appears in the screens of all participants. Chats can involve two or more people.

E-mail:

(Electronic Mail) is the exchange of computer-stored messages by telecommunication. It allows for the transfer of information from one computer to another, provided that they are hooked up via Internet. It is asynchronous in nature.

e-mail addresses a unique name that identifies an e-mail recipient. E-mail addresses take the form `username@hostname`. Wherein the host name is the Webmail service provider. E.g. Hotmail.

An e-mail address is a place where someone can contact another person, typically in the format `username@host.com`. Within an enterprise, users can send mail to a single recipient or broadcast it to multiple users. Mail is sent to a simulated mailbox in the network mail server or host computer until it is interrogated and deleted.

Off-line learning

It is defined as “presenting courses on a computer when it is not connected to a network.” The user will only be able to be instructed about the available course and is not able to explore information related to the courses via links or define the learning speed to his or her will.

CD-Rom (an abbreviation of “Compact Disc read-only memory”) is a Compact Disc that contains data accessible by a computer. While the Compact Disc format was originally designed for music storage and playback, the format was later adapted to hold any form of binary data. CD-ROMs are popularly used to distribute computer software, including games and multimedia applications, though any data can be stored (up to the capacity limit of a disc.) Some CDs hold both computer data and audio with the latter capable of being played on a CD player, whilst data (such as software or digital video) is only usable on a computer (such as PC CD-ROMs). These are called Enhanced CDs.

Blended learning

It is a Face-to-face training that is combined with E-learning, for example electronic conferencing within one organization or campus.

Trainers and trainees meet for a kick off, and for an evaluation. The learning goes on at a distance in time and place.

Blended learning combines e-learning tools with traditional classroom training to ensure maximum effectiveness. Students can prepare, consolidate and recall classroom experiences on line, while gaining the benefits of interaction with teachers and students via an actual classroom.

Blended learning offers:

- Social benefits from classroom training, focusing on learning that gains the most from face-to-face interaction.
- Individualization benefits of self-paced, online learning for content that required minimum interaction.
- Cost savings through minimizing the time away from the job and travel/classroom/instructor expenses.
- Greater flexibility to meet the different learning styles and levels of the audience.

Advantages of e-learning

- **Flexibility, accessibility, convenience:** Users are able to proceed through a program at their own pace and at their pace. Users can access an e-learning course anytime, anywhere, and learn only as much as they need.
- **Cross-platform:** E-learning can be accessed by Web browsing software on my platform. A training program can be delivered to any machine over the internet or intranet without having to author a program for each platform.
- **Browser software and internet are widely available:** Most computers have access to a browser, are connected to the organization's intranet or the internet.
- **Inexpensive worldwide distribution:** There is no need for a separate distribution mechanism.
- **Ease of updating information:** If changes need to be made to a program or courseware after the first implementation, these changes are made on the servers storing the program or

courseware. Everyone worldwide can instantly access the update of information.

- **Travel costs and time savings:** There are no travel costs for bringing remote Learners to a centralized Teaching
- **Training efficiency is increasing significantly:** Not only from a qualitative standpoint (i.e. pedagogical by the use of a new method, personalization, learner autonomy, memorization and follow-up, operational by creation of knowledge sharing community) but also from a quantitative standpoint (i.e. learning elapse decreases, learning cost may be reduced and learning effectiveness is increasing).

Limitations of e-learning

- **Bandwidth limitations.** Limited bandwidth means slower performance for sound, video and intensive graphics, causing long waits for download that can affect the ease of the learning process.
- **Loss of human contact.** There is a general concern that as we move towards more computer usage, a terminal will replace a friendly face. Gradual introduction of e-learning or the use of blended learning may be the answer to this concern.
- **E-learning programs are too static.** The level of interactivity is often too limited.
- **E-learning systems take more time and more money to develop than expected.** This is indeed the case, as it is with any new technology that is implemented. It is easier by starting with an easy program and building on success.
- **Not all courses are delivered well by computer.** Some training topics are not best served by computer based training and require a more personal touch. Team building issues and dealing with emotional issues are two examples.
- **Resistance to change.** Introducing e-learning initiative in an organization is not an easy-to-do task. Resistance may be

hard to overcome, lack of communication and commitment from champions within the organization may jeopardize the chances of a succeeding e-learning initiative.

Communication

Communication can be defined as the two-way meaningful exchange of ideas, emotions, information, attitudes and, most importantly, experiences.

In this world, everyone needs to communicate. Communication is central to human existence. One starts to communicate right after birth and a child's first cry is, perhaps, the most sought after communication. It is now well known that verbal as well as written forms of communication are but just a small percentage of the overall process and hence non-verbal communication (gestures, postures, looks, deportment, etc.) assumes greater importance. However, both are inter-related and often performed simultaneously. Also, both can be taught as well as learnt.

To make this complex yet critically important subject easy to comprehend and to make the process of communication, particularly verbal communication, more effective, ten easy to recall (user-friendly) words of day-to-day English, all starting with the letter 'C', have been adopted by the authors and called the Ten Commandments of Effective Communication. The readers will also come across several other commonly used words in English language, again starting with the letter 'C', during the course of reading this piece and elsewhere and many of you may also recall several such words which complement/supplement our Ten Commandments. Thus, the ten commandments propounded here are not the last word. Readers are advised to change, exchange, interchange these with those which suit the occasion and/or their style. The only being advocated cardinal rule here is to use only those words that begin with the letter 'C' for convenience and comfort.

YOU SHALL COMMUNICATE

1. **CLEARLY:** Whatever may be the content, unless it is delivered in a clear voice, will be an exercise in futility. The golden rule is to avoid grunts, huffs, etc. Rehearsals as well as role play helps. Use of natural accent of the speaker further adds to the clarity. (It is advisable not to assume a foreign one as then the focus is more on accent than on content). Vary tone/tenor, pitch and volume, as required by situation, to add more punch to the message you wish to convey. Avoid mumble and jumbles.

2. **COHERENTLY:** Besides clarity, coherent delivery of the message is perhaps as important. The cardinal rule here is to express yourself rationally & logically and, if possible, fluently. Command over the language to be used is an asset and hence in the beginning itself clarify the mode of communication to be employed . Coherence helps in making the process of communication smooth.

3. **CORRECTLY:** This is most important, particularly if your message includes data, figures, coordinates, etc. It is always better if you carry consult prepared notes. Thus, homework is vital. Of course, for the rest of the text/content, use appropriate words, phrases, etc. Again, as stated above, communication could be perhaps in vernacular, if not well versed with foreign language; even English.

4. **CONCISELY:** In most of the communication, it is always advisable to cut the bull and come straight to the point. Avoid beating about the bush. Even a humorous piece loses its punch if it is too long or has too many interruptions. To start with, define the subject clearly, albeit in brief. If possible, give a summary of what you wish to convey so that everyone remains focused on the main theme.

5. **CRISPLY:** If first four ‘Cs’ are followed in tandem, it becomes apparent to communicate crisply thus saving on time, effort and perhaps, money. Command over vocabulary and judicious use of phrases, helps. Crisp communiqués carry more punch and are more effective. You do not have to be curt to be crisp. Be cordial instead.

6. **CREDIBLY:** Credibility of the communication should be beyond doubt and it is almost synonymous to correct & coherent communication.

Wherever factual information is to be conveyed and use of statistics & data is unavoidable, quote reference(s). If necessary, back-up material should be available to help you carry the day in case the credibility is in question.

7. **CONVINCINGLY:** Any communication can become convincing if it is delivered with a smattering of examples, case studies, experiences, role plays, etc. These should be backed up with references to establish credibility. Clarity of purpose and sincerity of the one delivering the communication apparently add to making the communication more acceptable. Hence practice it before-hand, whenever you can.

8. **CONCLUSIVELY:** Conclusive here also means all-inclusive. It is better to re-cap the entire communication towards the end, of course in brief. This helps in zeroing on to the vital, critical issues in the communication. As mentioned above, clear definition of the subject or the purpose of the entire process aids in concluding properly.

9. **COMPLETELY:** An effective communication must have a well defined ending, linked to subject. You can gauge the level of all the 'C's mentioned above by asking for a feedback. There are several ways to check completion and the easiest is to ask if the message had reached the audience. Structured questionnaires are sometimes used for this purpose, particularly if the communication is to be used further.

10. **COST-EFFECTIVELY:** This dimension has not even been touched upon in most of the material available on effective communication. In today's world, however, it has assumed critical importance. It is not easy to make instant cost-benefit analysis of most communications but it is possible to have a fairly good idea. Of course, for any communication to be fruitful, benefits accrued should be more than cost involved. This is particularly true for lectures, training, interactions, etc. for which one has to pay to attend. In addition, your Communication should preferably be either Contemporary or

Classic depending on the receiver's background and also on the ambience. For example, to a young generation next audience, a Contemporary (chic) style and delivery will perhaps be more in order while a group of freedom fighters who took part in India's struggle for independence would appreciate the Classic approach. Here, Creativity could play a crucial role. One need to be imaginative and a judicious mix of both these modes may help the sender to carry the day, particularly if the audience consists of a mixed bag. However, try and avoid use of clichés and too much jargon.

Obviously, for communication to be effective, it must lead to a mutually acceptable and/or logical conclusion. This also bring about another critical aspect, and that is of Continuity. Thus even though one feels that the communication is complete, it is perhaps only the current phase that is concluded and that too for the time being. The process of Communication is very much on all the time if connectivity of the sender and receiver is ON.

Clear: Your messages need to be clear if they are to be effective.

Concise: If you want your messages to be read by busy people, make them brief. Say what you need to say, and say no more (while maintaining goodwill, of course). Remove all words phrases and sentences that serve no purpose. You can also eliminate wordiness by substituting one word for wordy, overused expressions.

Concrete: You have a choice in your writing to use concrete (specific) or abstract (vague) words. They both have a place in business writing. However, concrete terms are typically more accurate and, in some cases, more believable.

Correct: Correctness in business writing includes spelling, grammar, punctuation, and format. For spelling, punctuation, and grammar, you should keep a dictionary and a writer's guide at your desk.

Coherent: Messages need to "hang together." Ideas need to flow from one to the next through smooth transitions. You can achieve this by outlining your

messages, writing simple sentences and focusing each paragraph on one idea. You can also improve the coherence of your message through parallel structure, connecting words and phrases, and guide posts.

Complete: Check to be sure that your message is complete. Have you included all the information you need to ensure that the other person can do a complete job or make a reasonable decision?

Courteous: Your message should be positive—building goodwill and focused upon the reader. Watch gender specific language and always use proper titles.

BARRIERS TO EFFECTIVE COMMUNICATION

No matter how good the communication system in an organisation is, unfortunately barriers can and do often occur. This may be caused by a number of factors which can usually be summarised as being due to physical barriers, system design faults or additional barriers.

Physical barriers are often due to the nature of the environment.

Thus, for example, the natural barrier which exists, if staff are located in different buildings or on different sites.

Likewise, poor or outdated equipment, particularly the failure of management to introduce new technology, may also cause problems.



Staff shortages are another factor which frequently causes communication difficulties for an organisation.

Whilst distractions like background noise, poor lighting or an environment which is too hot or cold can all affect people's morale and concentration, which in turn interfere with effective communication.

System design faults refer to problems with the structures or systems in place in an organisation.

Examples might include an organisational structure which is unclear and therefore makes it confusing to know who to communicate with.

Other examples could be inefficient or inappropriate information systems, a lack of supervision or training, and a lack of clarity in roles and responsibilities which can lead to staff being uncertain about what



is expected of them.

Attitudinal barriers

come about as a result of problems with staff in an organisation.

These may be brought about, for example, by such factors as poor management, lack of consultation with employees, personality conflicts which can result in people delaying or refusing to communicate, the personal attitudes of individual employees which may be due to lack of motivation or dissatisfaction at work, brought about by insufficient training to enable them to carry out particular tasks, or just resistance to change due to entrenched attitudes and ideas.



OTHER COMMON BARRIERS TO EFFECTIVE COMMUNICATION INCLUDE:



Psychological factors such as people's state of mind. We all tend to feel happier and more receptive to information when the sun shines.

Equally, if someone has personal problems like worries about their health or marriage, then this will probably affect them.



Different languages and cultures represent a national barrier which is particularly important for organisations involved in overseas business.



Individual linguistic ability is also important. The use of difficult or inappropriate words in communication can prevent people from understanding the message.

Poorly explained or misunderstood messages can also result in confusion. We can all think of situations where we have listened to something explained which we just could not grasp.



Physiological barriers may result from individuals' personal discomfort, caused, for example, by ill health, poor eye sight or hearing difficulties.



Presentation of information is also important to aid understanding.

TEAM TEACHING

- **“Team teaching is that teaching learning process where two or more teachers co-operatively formulate a plan, carry it out, evaluate its effectiveness as it relates to a specific group of students”**

-S.G Callahan

- **“Team teaching is that organized form of the teaching structure in which two or more teachers co-operatively teach a particular subject or topic to a group of students”**

-Haridwar

- **Team teaching represents “a form of organization in which individual teacher decide to pool resources, interest and expertise in order to devise and implement a scheme of students and the facilities of the institution”**
- **Characteristics of Team-teaching:**
- **It is an organized device to plan, execute and evaluate the teaching work in a co-operative way.**
- **It is an instructional arrangement.**

- **Works on the principles of joint responsibility shared by the members of the team**
- **It helps the students in getting the best service of best of the team teaching.**
- **Contd...**
- **It calls for team spirit in teaching.**
- **It inspires and motivates the individual teacher to improve his knowledge an skills.**
- **Provides autonomy and freedom to the member of the team.**
- **It helps in utilizing available available resources- human and material.**
- **Objectives of Team-Teaching:**
- **To bring improvement in the quality instruction.**
- **To develop feeling of joint responsibility.**
- **To make best utilization of the teaching-learning situations.**
- **Better organization of the teaching-learning situations**
- **To provide pupil with opportunities to learn both from authority and his own discovery and discussion with his peers.**
- **Principles of Team Teaching:**
- **Principle of pooling the resources**
- **Principle of joint responsibility and co-operation**
- **Principle of attending the needs of the student**
- **Principle of flexibility in terms of grouping and scheduling**
- **Principle of appropriate selection of the team member**

- **Principle of willingness and appropriate distribution of the responsibility**
- **Principle of appropriate teaching-learning environment**
- **Principle of appropriate supervision and evaluation**
- **Procedure of Team- teaching:**

It depends in three things

- **Purpose of teaching**
- **Availability of experience**
- **Physical facilities in the institution concerned**
- **Three stages of Team-teaching:**
 - **Planning:**
 - **Deciding the topic to be taught**
 - **Formulating objectives in behavioural terms**
 - **Identifying the initial behaviour of the student**
 - **Identifying the available recourses**
 - **Selecting a teaching team**
 - **Assigning duties according to their interest and abilities**
 - **Preparing a tentative schedule of teaching**
 - **Selecting teaching strategies**
 - **Deciding teaching strategies**
 - **Deciding ways and means of evaluating the educational outcome of the pupil**
 - **Execution:**

- **Actual teaching-learning process**
- **Adopting appropriate communication strategy**
- **Presentation of lead lecture by a competent teacher of the team**
- **Follow up work- the other teacher supplements the lead lecture by explaining the elements of the topic in a more simple way.**
- **For e.g. –showing the map, draw the summary on board, demonstrate some experiments, and give examples.**
- **Provides motivation by the teachers**
- **Maintenance of discipline**
- **Providing appropriate answers to the question asked by the students**
 - **Evaluation:**
 - **Based on the objectives of the topic**
 - **Evaluating the level of performances**
 - **Evaluating by oral, written and practical tests**
 - **Diagnosis the difficulties of the pupils and providing them with remedial treatment**
 - **Advantages of Team Teaching:**
 - **1) Here teacher discharge their responsibilities according to their interest and abilities hence they can play their role effectively and efficiently**
 - **2) Best utilization of the available material resources, for e.g. multimedia, different audio visual, library for references**
 - **3) Providing opportunities for professional growth- young and less experienced teacher get opportunities to work with the**

experienced and talented ones and learn many things about their subject and teaching skills

- **4) Provide better learning opportunities to the learners- get best from best teacher provided proper opportunities for raising questions, getting there difficulties solved and have free discussion on the topic of their interest.**
- **5) Provides opportunities for interaction with experts in subject or specialized field and provides inspirations and motivation in the field of learning, instruction and research.**
- **6) Helps in maintaining proper human relationships and cooperative attitude.**
- **7) Proves economical in terms of time and labour**
- **8) Provides proper flexibility in time of scheduling and grouping**
- **9) Behavioural problems easier to resolve**
- **10) It can be done successfully at secondary, higher secondary, college and university levels**
- **11) Students too can gain valuable experiences by observing team-teaching and will help them modify their behaviour**
- **12) Useful for slow learners and exceptional learners.**
- **Limitations:**
- **Difficulty in the distributing of the responsibility to the team members**
- **Difficulty in maintaining harmony and understanding among the member of the team**
- **Too much expectation from the teacher**
- **Under importance of the teachers at the cost of the learners**
- **Difficulty regarding lack of material faculties I schools**

- **Not suitable to the present educational setup**
- **Teachers resistance for any change**
- **Costly affair**
- **Hampers the emotional, social and academic progress of certain students**

SEMINAR

- **Seminar is innovative in the field of education. These seminars are conducted at different levels. At international level countries host and organize seminar on global issues like global warming, pollution etc. At national level seminar are organized by universities, NCERT, institutions in different topics.**
- **Now the latest innovations in this area are using it as the method of instruction in the classroom at the higher levels.**
 - **Definition:**
 - **“Seminar is an instructional technique of higher learning which involves proper reading on a theme followed by the group discussion to clarify the complex aspects of the theme”**
 - **Nature:**
 - **It is a socialized method of learning.**
 - **A structured group discussion takes place after a formal lecture.**
 - **Objectives:**
 - **To develop ability of analysis, synthesis and evaluation**
 - **To develop the ability of responding, organizing, quick compensation of situation and quick reaction of the situation.**

- To develop the ability of keen observation and to present oneself effectively
- **Roles in seminar Technique:**
 - **1) Organize:**
 - Planning, preparation, deciding the topic or theme
 - Outline of the entire program right from the conception of idea to the concluding session
 - Arrange the venue
 - Date, time
 - **2) President or Examiner:**
 - Summarize the discussion and present view points on the theme
 - Keeps control on timing
 - Make sure that the speaker and participants follow the set rules properly
 - **3) Speakers or proper presenter:**
 - Study the topic thoroughly and prepare the paper
 - Ready to accept criticism
 - Ready to give answers to all question
 - **4) Participants:**
 - Acquainted with the theme
 - Put questions, argue or contradict the views
 - Have freedom to express their own views or opinions
- **Procedure:**
 - **1) Preparation:**

- **The teacher takes initiation in acquainting students with the purpose and objectives of the seminar.**
- **Students are mentally ready and actively participate.**
- **Topic is generally related to the syllabus**
- **The speakers through informal discussion decides on the aspects of the topic**
- **The speaker takes reference from library, research paper, internet etc.**
- **Data is collected, organized in a sequential manner to be presented in the seminar session.**
 - **2) Presentation:**
 - **The chair person opens the session and invites the speaker to read the paper.**
 - **The speaker presents his paper with the help of OHP or LCD etc.**
 - **After the paper reading the paper open for the discussion.**
 - **3) Evaluation:**
 - **One of the main aspects after paper presentation**
 - **The observers give their feed back**
 - **Other participants comment, express their views and ask question.**
 - **In the last, the chair person sums up the session with this remark.**
 - **Advantages:**
 - **In the seminar the knowledge and intellect of all the participants are pooled together to work out a solution to the problem**

- **Develop self reliance, self confidence and a feeling of responsibility**
- **Develops critical thinking**
- **The power of comprehension is developed**
- **In depth learning and to probe into the topic deeply**
- **Openness to ideas**
- **Develops team spirit**
- **Develop leadership quality**
- **Undertaken within a short period of time without disturbing the routine work**
- **Analytical mind is developed**
- **Limitations:**
- **Not suitable for all topics**
- **Dominated by few persons**
- **It is likely to go off track**
- **Involve unnecessary arguments**
- **May create emotional tension**

***INFORMATION & COMMUNICATION TECHNOLOGY IN
EDUCATION***

Paper IV-I

Unit-II b-iii

Among the various types of materials available under still projection, slides & film strips are the foremost visual aids, They are of great value in teaching. Slides projector or Dias-cope popularly known as magic lanterns is an optical aid to the process of teaching. It is used for projecting pictures from a transparent slides on a wall or a screen. It helps in showing the magnified image of the slide. The slide projector is useful for small as well as large groups.

Construction of Slide Projector:

- **Source of light (Projection Lamp).**
- **Reflector (Concave Mirror).**
- **Condensing lens.**
- **Slide Carrier.**
- **Objective lens.**

All these elements are contained in a light weight metal case.

Working of Slide Projectors:

The light rays emitted by a source of light and reflected by the concave mirror lying behind the lamp, are directed forward to fall to the condensed lens. The lens shatters and bends the rays into a strong beam of light which passes through the slides CD and comes to a point at the center of the objective lens. The objective lens as a divergent lens spreads the light rays and directs them on the screen surface.

Precautions to be observed while using Slide Projector:

- **Background.**
- **Running commentary.**
- **Discussion.**
- **Encouragement.**

Uses of slides:

- ❑ **Educational information:** The slide projector has immense educational value because of variety of information may be given by given using maps, drawings & photographs etc.
- ❑ **Motivational force:** It arouses attention and interest of the students. A projected image has great power to hold attention of the audience.
- ❑ **Easy to transport:** Slide projector is light and easy to transport.
- ❑ **Easy to use:** It is very easy to use. It is a simple device of showing the magnified object on the screen.
- ❑ **Pictures on screen:** The pictures on the screen can be allowed to remain there as long as the students wish.
- ❑ **Interesting:** The whole activity is interesting.
- ❑ **Economical in time:** There is no wastage of time and energy.
- ❑ **Not costly:** Slide projector is not costly. Any school can afford to have it.
- ❑ **Non-fragile:** It is not easily broken.
- ❑ **Non-inflammable:** It is non-inflammable.

Limitations:

- **Not suitable for all types of material:** Every type of material cannot be projected by the slide projector.
- **Not excessive use:** The glass slides are becoming costlier now, It may not be put to excessive use.
- **Limited only to the use of diagrams and pictures:** The presentation of word information is not possible in the case of slide projector.

PAPER- IV SECTION-1
INFORMATION AND COMMUNICATION TECHNOLOGY IN
EDUCATION AND SPECIAL FIELD

“Any sufficiently advanced technology is indistinguishable from magic”

- Arthur C. Clarke 1917

Edgar Dale (April 27, 1900 – March 8, 1985) was a U.S. educationist who developed the famous CONE OF EXPERIENCE.

‘DALE’S CONE OF EXPERIENCE

WE TEND TO REMEMBER....

Direct Purposeful Experience

Contrived Experience

Dramatic Participation

Demonstrations

Field Trips

Exhibits

Motion Pictures

Still Pictures, Radio, Recordings

Visual Symbols

Verbal Symbols

Paper IV Unit II**Instructional Materials****☉ Instructional Materials****Objectives**

- 1. To develop awareness**
- 2. To understand the psychological bases**
- 3. To understand the process of the selection and utilization**
- 4. To develop discrimination between the different kinds of instructional materials**
- 5. To develop the skill of using aids according to the content, psychological level, environment condition and the available resources in the classroom**

They are those materials that provide a kind of learning experience of direct indirect or participatory in nature

Senses are the gateways of knowledge

So out of 100%

We learn

1% by sense of taste

1.5% sense of touch

3.5% sense of smell

11% sense of hearing

83% by sight

We remember

10% Read

20% Hear

30% See

50% See and hear

70% Say (Self) under

90% say and do a thing. Learning and doing

☉ **Dale's cone of experience**

Learning experience can be classified in number of ways. Edgar Dale's psychological classification is known as Dale's cone of experience. The experience at the base of the cone is the direct purposeful experience whereas the one at the apex is the abstract verbal symbolic experience. All other experiences are arranged from bottom to top in increasing order of abstractness.

- 1. Direct purposeful experience: It is handled, touched, tasted, felt, smelled. It is the base of all effective teaching. E.g. Field trips, Demonstrations.**
- 2. Contrived Experiences: It is those which are arranged, designed, closely resembling direct experiences. E.g. Models, Charts.**
- 3. Dramatic participation: They help us get as close as possible to certain realities that we cannot reach first hand. It is reconstructed experience.**
- 4. Demonstration: It can be learning by doing based on teaching. E.g. dissection of a frog.**
- 5. Field Trips: To bring the pupils face to face with reality. Taking them to real sites.**
- 6. Exhibits: It consists of working models arranged in a meaningful manner. E.g. Photographs.**

7. Motion pictures: It is an abstract version of a real event. It can reconstruct with such dramatic intensity with such realism that even the slowest child will react to its meaning.

8. Still pictures, Radio, Recording: It is one-dimensional. The two together complement each other. E.g. Slides with commentary.

9. Visual; symbol: Charts, Graphs, and Maps.

10. Verbal symbols: Word, Idea, Concept etc.

⊙ **The Authentic Cone**

⊙ **1946, 1st Edition of *Audiovisual Methods in Teaching***

⊙ **1954, 2nd Edition of *Audiovisual Methods in Teaching***

⊙ **1969, 3rd Edition of *Audiovisual Methods in Teaching***

⊙ **Advantages**

- 1. Learning experiences can be arranged in the increasing and decreasing order of abstractness**
- 2. Awareness to teachers of their relative value.**
- 3. Inductive and deductive strategy of teachers.**
- 4. Different experiences have different effects and so a combination of experiences.**

⊙ **Limitations**

- 1. It is a hypothesis and so experiences can be rearranged.**
- 2. No scope to classify newer learning experiences like computers.**
- 3. Verbal symbols and visual symbols need not be purposeless since being at the abstract end rather too are an essential aspect in learning.**
- 4. Field trips and demonstrations can be interchanged.**

⊙ Principles for the Selection of Instructional Materials

- 1. It's Educational purpose**
- 2. It's appropriation to the child's age, intelligence and experience of pupils.**
- 3. It's participatory value.**
- 4. It's affordability.**
- 5. It's maximum utility.**
- 6. It's multiple uses.**
- 7. It's relatedness**

⊙ Principles for the Selection of Instructional Materials

- 8. It's continuous evaluation.**
- 9. The principle of physical control.**
- 10. The principle of preparation.**
- 11. The principle of action.**
- 12. The principle of Appraisal.**

⊙ Psychological bases of Instructional Materials

- 1. Best motivators.**
- 2. Clear Images.**
- 3. Vicarious Experience.**
- 4. Variety.**
- 5. Freedom of Expression.**
- 6. Retentivity.**

⊙ Psychological bases of Instructional Materials

- 7. Based on maxims of teaching.**
- 8. Attracts attention.**
- 9. Realism.**
- 10. Vividness.**
- 11. Meeting Individual differences.**
- 12. Development of higher faculties.**
- 13. Solves the problem of indiscipline.**

Tele conferencing

■ Introduction

- The two way interactive electronic medium has received attention which is a viable option for distance learning as specially to the learners in the areas where educational resources are scarce. This has contributed to a great deal to bring the world closer .**

■ Definition

- Tele conferencing is electronic communication between two or more people at a distance .**

■ Characteristics

- A system for exchanging information**
- Real time communication**
- Two way communication**
- Group activity**

- **Holistic system of communication since it integrates the electronic media and communication to work in real time**
- **Objectives**
- **To provide access to educational resources for people separated by long distances**
- **To provide access to subject matter experts not available at 1 place**
- **To provide interactions and opportunities for joint activities with students in other schools and locations**
- **Objectives**
- **To provide opportunities for staff development**
- **To promote school linkages**
- **To provide opportunities of e-learning to the students**
- **Tele conferencing is divided into 3 major types**
- **Audio Conferencing**
- **It is actually telephone conferencing because telephone technology makes up the network that interconnects the conferees.**
- **It is a live 2 way conversation among groups at different location connected by telephone lines or satellite which requires a special micro-phone amplifier device (voice activated) at each location**
- **Advantages of Audio Tele Conferencing**
- **Use of familiar technology**
- **Accessibility**
- **Compatibility**
- **Ability to set up conferences on short notice**

- **Comparative low cost**
- **Sophisticated**
- **Speakers are available for larger groups**
- **Disadvantages of Audio Tele Conferencing**
- **The learners need to prepare for the study material well ahead of the actual conferencing time. These may lead to the creation of confusion and misleading perceptions about the subject matter.**
- **Learners not in physical contact may feel a little reluctant to ask questions or may lose interest**
- **Computer-Data Conferencing**
- **Data Conferencing is a system where by the participants at 2 or more seats share the work place on their computer desktop**
- **Computer-Data Conferencing are of two types :-**
- **Application sharing**
- **These connection allow the transmission of data messages, data base, and graphics to pass back and forth across a room or around the world**
- **Telephone wires**
- **Fiber optic cables**
- **Microwave antennas**
- **Satellite**
- **Whiteboard sharing**
- **It is an electronic version of a try erase board that enables learners in a virtual class room view what and instructor, presenter fellow learner writes or draws. Also called a smart board or electronic whiteboard**

- **Whiteboard sharing**
- **This technology requires a computer, a projector and software and the whiteboard. The computer is connected to the projector displays the computer screen image on the board**
- **Interactive whiteboard**
- **It need to be connected to a pc with data projector attached. Any software applications which are installed on the connected pc can be used on the whiteboard.**
- **Interactive whiteboard**
- **The whiteboard is controlled with an electronic pen which acts both as a mouse and board pen. The lecturer and class then have full use of any software application**
- **Benefits of using Whiteboard**
- **Just like conventional boards that the teacher uses, these whiteboards too can help him to explain, clarify a point or draw symbolic figures, diagrams to communicate more clearly.**
- **They help in broadening the use of E-learning because they demonstrate the potential of alternative modes of delivery.**
- **Benefits of using Whiteboard**
- **They make it easy for the teacher to enhance the presentation content by easily integrating a wide range of material into a lesson, such as, pictures from the internet, a graph or text from files etc.**
- **They allow learner to participate in group discussion**
- **Disadvantages of Whiteboard**
- **They are more expensive then the conventional ones.**
- **Their surface can become damaged and replacement is expensive**

- **Video teleconferencing**
- **“It is the highest form of teleconferencing in which a two way exchange of moving pictures is possible in addition to audio and data .”**
- **Characteristics of Video Teleconferencing**
- **A real time communication over a distances that provides an opportunity for live discussion and immediate feedback.**
- **An effect of virtual presence where a person at a distance sight appears to be in the same room**
- **Technological aspects in video conferencing**
- **Bandwidth**
- **Video compressing**
- **Channel for delivering video conferencing**
- **By standard telephone lines**
- **By ISDN (Integrated Service Digital Network)**
- **By satellite**
- **Kinds of video conferencing**
- **Procedure of Teleconferencing**
- **Preparation**
 - **Room set up**
 - **Checking of the equipments**
 - **Pre-prepared documents**
 - **Prior practice**
- **Starting the session**

❑ Recording**■ Advantages of Tele conferencing****■ Accessibility****■ Unity****■ Timely information****■ Active participation****■ Cost effective****■ Save time****■ Barriers of Tele conferencing****■ Intercommunication delay****■ Interpersonal interaction****■ Managerial problem****■ Lack of preparedness****Transactional Analysis (TA)**

- **Learning is the basis of growth**
- **Learning is the acquisition of habits, knowledge and attitudes...
(Crow & Crow-1973)**
- **Transactions are vehicles of transmission of knowledge, values and attitudes**
- **Transactional Analysis (TA)**
- **When two people interact with each other results a social transaction**

- **TA is the study of social transactions between people**

- Eric Bern

- Thomas Harris & Jogeward (1960)

- **All social, psychological, material and spiritual contact between individuals can be defined as transactions**

- Deadley Bennette

- **TA involves the study of:**

- **EGO – STATES**

- **TRANSACTIONS**

- **LIFE – POSITIONS**

- **EGO – States**

- **Ego- States is coherent system of thoughts, feelings and behaviour**

- **Three Ego states are:**

- **PARENT EGO (TAUGHT)**

(Recording of imposed, external, unquestioned events)

- **ADULT EGO (THOUGHTS CONCEPT)**

- **CHILD EGO (FELT CONCEPT)**

- *Parent is all about rules and laws*

- *Adult is rational, logical, clear, practical*

- *Child is about feelings, good and bad*

- **EGO – States (cont)**

- **According to BERNE, People interact with each other from the child, adult or parent ego state**

- **COMPLIMENTARY TRANSACTIONS - These kinds of transactions occur when the message sent or the behaviour exhibited by one person's ego states receives the appropriate or expected response from other person's ego state**
- **CROSSED TRANSACTIONS - A crossed transaction occurs when unexpected response is made to the stimulus. An inappropriate ego state is activated and the lines of transaction between people get crossed**
- **Life Positions**
- **I am ok, you are ok – mature & positive look towards life**
- **I am ok, you are not ok – overconfidence in self and lack of confidence in others**
- **I am not ok, you are ok – represent lack of self confidence**
- **I am not ok, you are not ok - Lack of Trust in self as well as in others**
- **The good news for society is that “I am ok – you are ok”**
- **The other life positions are psychologically less mature and less effective**