T.Y.B.A. (Education)
PAPER V
COMMUNICATION MODES
IN EDUCATION

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Syllabus of TYBA Education
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    ii) Factors promoting effective communication,
    iii) Types of communication - verbal and non-verbal.
3. Transactional Analysis : Concept and educational Implications.
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    ii) Visualizing / observing - Illustration (verbal & nonverbal),
    iii) Reading & Speaking - Print material: textbooks, reference books and journals,
    iv) Distance mode - Mass media and satellite communication, the radio, print media, T.V. Internet, on-line learning.
5. Instructional Material for Multisensory Learning
    i) Principles and psychological basis,
    ii) Types - (a) audio, (b) visual , (c) audio-visual,
    iii) Uses and limitations.
6. Methods of Learning and Teaching
    i) Self learning - self study, programmed learning,
    ii) Group learning - Lecture, demonstration, Lecture cum demonstration, seminar, workshop, dramatization, simulation (role-play), brainstorming.
7. Education through computers :
    i) Computer assisted learning,
    ii) Computer managed instruction.
8. Practical Work : Any one of the following
    i) Preparation of Programmed Learning Material (linear) covering 10 or more frames.
    ii) Preparation of three visual aids on topics in the syllabus.
    iii) A critical analysis of three radio or television programmes based on educational Issues.

PAPER V COMMUNICATIONS MODES IN EDUCATION (TYBA)

Books recommended for reference :

- Guidance in Communication : A guide to Assertive and Social Skill -A.B. Ronald
- Educational Technology - C. D. Bengalee
- Methodology and Teaching - K. K. Bhatia & J. D. Arora
- The Principles and Methods of Teaching - K. Bhatia & B.D. Bhatia
- Teaching in Secondary Schools - N. Bossing.
- Communication in Classroom - M. B. Buch & M. R. Santhanam
- Innovation in Teaching Learning Process - S. S. Chauhan
- Audio Visual Methods in Teaching - Edgar Dale
- Techniques of Teaching - H. Dhand
- Technology of Teaching - R. Gulati & K. Gulati
- A Concise Course in Methods of Teaching - D. S. Gupta
- Methods and Techniques of Teaching - S. K. Kocchar
- Educational Technology - K. L. Kumar
- Communication in Education : A. Rhetoric of Schooling and Learning - G. M. Phillips
- Communication and Learning - P. S. Len
- Educational Technology - Usha Rao
- The Principles of Education - T. Raymont
- A New Approach to Educational Technology - M. S. Sachdeva
- Introduction to Educational Technology - K. Sampat, et, al
- Advanced Educational Technology - R. A. Sharma
- Instruction to Education : Teaching - Technology - M. R. Shah, et al
- Communication in Schools - Sheela Taori
- Educational Technology - Tarachand
- Modern Methods and Techniques of Teaching - G. A. Yoakam & R.G..Simpson

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1

EDUCATIONAL TECHNOLOGY CONCEPT, NEED & SCOPE

Unit Structure :

1.1 OBJECTIVES

The unit deals with the introduction of Education Technology. It helps to:

1) Gain information about Education and Technology, and Educational Technology.

2) Gain understanding about concept and scope of ET

3) Distinguish between A.V. aids and E.T.

4) Compare ET1, ET2 and ET3

5) Define E T

6) Describe the characteristics of ET

1.2 EDUCATIONAL TECHNOLOGY: CONCEPT, NEED AND SCOPE

Background:

We all know that new frontiers of knowledge are opening day by day and the horizon of human knowledge and understanding is expanding very fast. In most of the subjects moreover knowledge is cumulative so that every now and then, there is more to be learnt.

Besides, closer relations among countries of the world have resulted in wide international communication making information explosion more acute and complicated.

The role of technology in education came to be emphasised greatly in the second half of twentieth century all over the world. Today technology and education are inseparable. Instruction of technology and the need of it in the field of education is ever increasing. In the beginning a bit of technology was used to aid the teaching and learning process. Today, we make use of advanced technology in the field of education. Mass - media, both print and electronic is utilized in a big way to make learning easy and enjoyable. Books, magazines, journals, radio, TV, satellites etc are involved in the field of education.
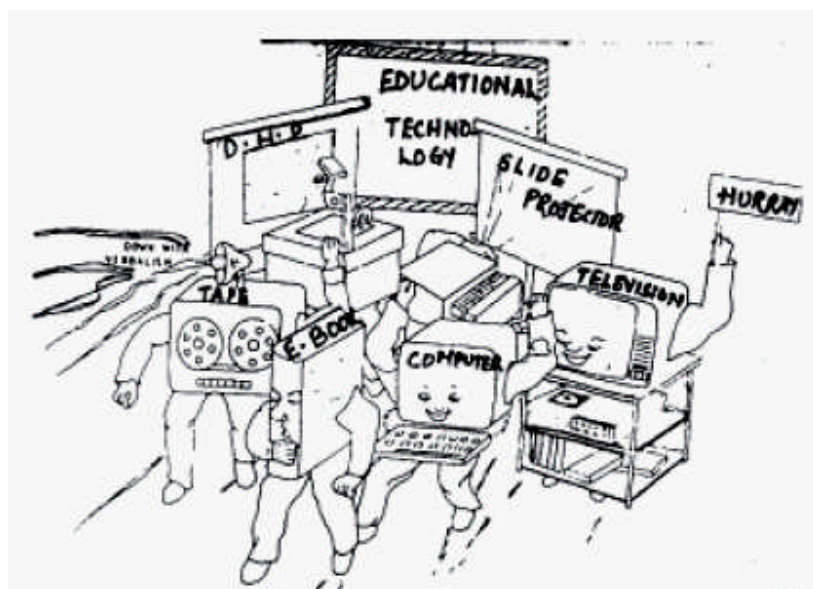
Fig. 1.1 The future class room

1.3 CONCEPT - OF EDUCATIONAL TECHNOLOGY:

Educational Technology as a concept has been in vogue for last two decades. It is two-fold in nature:

1. The use of mass media and audio visual in education. In its real sense of the term, the concept of Educational Technology (ET) has an extremely limited meaning. It projects the picture of educational hardware - like film projectors, slide projectors, tape-recorders, computers etc. They think merely the introduction of various sorts of technical equipment and audio-visual aids in the classroom must lend to increased efficiency. In this concept Educational Technology becomes a more sophisticated form of audio-visual education.

2. Utilization of all available resources: In the second sense of the term, the concept of ET is quite comprehensive which takes into account all resources available in the system and their uses to optimize teaching learning process. The softwares are used by the teacher in the classroom effectively and efficiently so as to get the desired results. By using machine and technology teacher executes the delicate art of teaching in an exquisite manner, ensuring maximum learning.

To be very simple, we can understand the concept of Educational Technology from the following two interpretations:

a) Technology in Education
b) Technology for Education

Fig. 1.2 Place of Educational Technology in Education

1.4 DEFINITIONS OF EDUCATIONAL TECHNOLOGY

*   Council for Educational Technology, UK.
    "Educational Technology is the development, application and evaluation of systems and aids to improve the process of human learning."

*   John P. Dececco
    "Educational Technology is the form of detail application of psychology of learning to practical teaching problems."

*   Robert A. Cox
    "Educational Technology is the application of scientific process to mans learning condition."

*   S. S. Kulkarni
    "Educational Technology may be defined as the application of the laws as well as recent discoveries of science and technology to the process of education."

- G.O.M. Leith
"Educational Technology is the application of scientific knowledge about learning and the conditions of learning to improve the effectiveness and efficiency of teaching and training."
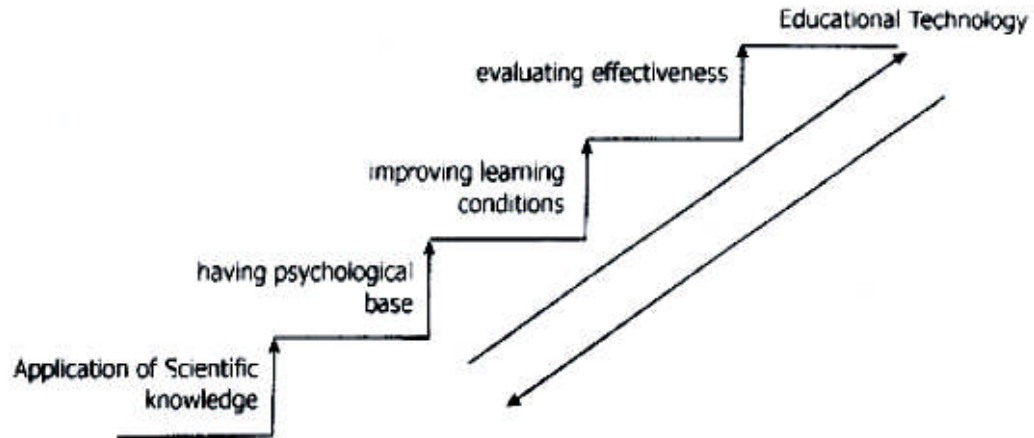
Fig. 1.3 Sum of all Given definitions

1.5 CHARACTERISTICS OF EDUCATIONAL TECHNOLOGY

1. Educational Technology contributes in developing various learning methods.
2. The base of Educational Technology is science.
3. Educational Technology is a continuous dynamic technology.
4. Educational Technology encompasses psychology, science technology, system, art, audio visual aids.
5. Educational Technology encourages learning by controlling the environment.
6. Educational Technology improves teaching, learning and evaluation conditions.
7. By using Educational Technology, the learning outcomes can be evaluated.
8. Educational Technology cannot solve each and every problem of education.

Check your progress:

1. RAVI is a problem child. Those problems of his that can be solved by the use of ET

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1.6 NEED FOR EDUCATIONAL TECHNOLOGY

Educational Technology enjoys special importance in all the countries of the world. Hence, every country is applying educational technology in accordance to its educational system. Hence, we shall discuss the need of Educational Technology.

1) Increasing the effectiveness of teaching learning process: ET makes education efficient. It involves greater psychological and pedagogical preparedness, a scientific attitude and a coordinated approach to the educational process as a whole. Hence the teaching becomes sharp, the learning sharper.

2) Maximizing the output: The traditional classroom with one teacher teaching 30 or 40 students which is mainly one way communication of information is no longer effective for modern times. For solving these problems successfully educational technology can be used. Both quantitative expansion as well as qualitative improvement of education can be facilitated and accelerated.

3) Curriculum Development: Curriculum is the sum total of learning experiences provided by school. One of the reasons of current student unrest throughout the world is the fact that curriculum reform has not been continuous and the curriculum has not been entirely relevant. A child probably learns more out of the

school than in side the school. With the help of ET we can make suitable subject content, behavioral outcomes and other learning experiences in accordance to students needs and aspiration.

4) Evaluation Procedure: Educational Technology helps in better evaluation process which can be reliable, quick and time bound. With the advent of modernization and globalization, every day we hear of new course been commencing, swelling population of learning institution, lack of trained evaluation experts, ET can be considered as the only boon.

5) For feedback and modification of behaviour of pupils: Educationist now-a-days realize that "Learning" is more important than "teaching." A traditional score or a result may tell you the summative evaluation but with the use of Educational Technology we can specify and mark the weak areas of learning and modify his learning. This is not only quick but also gives direction for improvement which is specific.

6) For mass learning- Educational Technology has made it possible to reach a large number of pupils at the same time. It has helped us in providing non formal education distance education and adult education. India being a developing country both material and human resources are limited. Yet ET has proved beneficial in bringing many learners under one canopy, saving resources but maintaining qualitative exposure.

7) Transmission of culture: Educational Technology helps in transmission of culture and heritage to the next generation. Old books, relics, paintings, cassettes, Video Compact Disc (VCD) which preserve culture of the present generation help the next generation to understand and preserve value and culture.

Check your progress:

A remote village in Jorhart district of Assam have decided to open a school which would connect its students to the world without uprooting them from their land and culture. List the no of things they require to achieve their goal keeping Edu. Tech in mind:

a)   d)   g)
b)   e)   h)
c)   f)

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1.7 SCOPE OF EDUCATIONAL TECHNOLOGY

With the advance of science and technology there are new learning aids which have revolutionized the learning process in particular and education as a whole. Educational Technology got developed as a new subject in the field of education since the last few years. The term "Education" includes teaching learning, instruction and training, similarly technology is also a wide term in which following technologies are included:

1) Behavioral Technology 2) Instructional Technology 3) Teaching Technology 4) Instructional Design 5) Training Psychology 6) Cybernetic Psychology 7) System Analysis.

Hence the scope of Educational Technology is as follows:

1. Hardware Approach: (ET_1) Earlier educational process was teacher centered, the method of learning was rote, a few text books and a lone chalk board was the only aid. Subsequently a number of audio- visual materials were introduced and used in teaching - learning process. It was usually thought that teaching machines, film projects slide-projector, language laboratories, tape-recorders, cassettes, radio, television, video-tape recorders, computers etc are educational technology. But this is only one aspect of educational technology and this aspect which stretches over to the machine aspect is called Hardware Approach.

2. Software Approach:- (ET_2) Another aspect which is supplementary or we can say the by product of earlier aspect is the new-methods of teaching, tested principles and practices innovation e.g. programme learning, micro-teaching, team teaching, the revised and enriched course material etc are called the software component or software approach of Educational Technology. Psychological principles of teaching and learning are utilized so that desirable changes may be brought about in the behavior of the pupil. These points constitute Software Approach.

3. System Analysis (ET_3): When we work with people besides the methods, the software, the hardware we need to also have manage them. It is associated with administration, management, commerce, industry and army. We need to study the problems of educational administration and management in a scientific and conclusive way. We need to have development of educational administration and formulation of instructional outline. By using it one can make the educational system, educational administration and management effective. Thus, managing the educational system is known as System Analysis.

Thus, ET has proved to help in clarifying concepts stimulating group and individual activities, developing a collective critical awareness, changing attitudes, imposing a new, structure or organization on certain subjects and encouraging originality and creativeness. But in reality, there has been no systematic use of technology in education. Pupils are exposed to "sporadic bursts of audio-visual information". So, we must not mistake audio visual aids with educational technology.

1.8 AUDIO - VISUAL AIDS V/S EDUCATIONAL TECHNOLOGY

1. Audio visual aids are physical objects. Educational Technology is a complete subject.

2. Audio visuals consist of print matter, projected and electronic resources such as films, OHP and audio aids. Educational Technology encompasses learning psychology communication and advances in science and technology.

3. Audio visual aids are material products Educational Technology connotes processes and products of instructional designs.

4. Audio visual aids do not cater according to group dynamics and individual differences. Educational Technology caters with the processes of implementing methods, resources with regard to group dynamics and individual difference.

5. Audio-visuals are products of technology alone. They are mere technological gadgets. Educational Technology is not just technology, it has psychology, administrative shades and social anthropology all embedded into it.

6. Audio-visuals are normally just one material standing all alone. Educational Technology functions with number of interconnected and interdependent components.

7. Audio-visual aids are different for different topics and subject. They can fit into the curriculum. Educational technology principles are applicable to all topics and subjects and hence is applicable for the entire curriculum pattern.

1.9 LET US SUM UP

- The role of technology in education is of great importance. The technology is an integral part of all teaching. learning process irrespective of place, age, type and level. The technology is dynamic in nature. It is ever changing, hence the education also keeps shaping itself.

- Educational Technology can be interpreted in 2 ways Technology in

- Education and Technology for Education.

- Educational Technology is application of scientific knowledge with psychological base, for improvement of the learning conditions.

- Need for Education Technology

- Increasing the effectiveness of teaching learning process Maximising the output - Curriculum Development - Evaluation Procedure - Modification - Mass Learning - Transmission of culture.

- Scope of Educational Technology

  Hardware Approach

  Software Approach

  Systems Approach or Analysis

- Difference between Audio visual aids and Educational Technology.

1.10 QUESTIONS

1) "Education and Technology are inseparable" - Justify the statements with suitable examples.
2) Explain the need of technology in the field of education with suitable examples. Write down five situations where teacher can be more effective using the E.T.
3) What is the scope of Educational Technology with appropriate examples?
4) State the difference between Audio visual Aids and Educational Technology.
5) Plan a teaching session of 40 minutes. List down all the Aids you will use while teaching. Also mention the learning strategies and points where you would use the aid.
6) How can you make Educational Technology popular in rural areas?

1.11 SUGGESTED READINGS

1. Kumari Sarita and Srivastava D.S. (2005) - Education Instructional Methods, ISHA BOOKS, NEW DELHI,

2. Kumari Sarita (2005) - Increasing Role of Technology in Education, ISHA BOOKS NEW DELHI

3. Rawat Dr. S. C. (2004) - Essentials of Educational Technology - R. Loll Book Dept. Meerut

4. Saxena Swarup N.C. and Oberoi Dr S.C. (2004) Technology of Teaching R. Lall Book Depot Meerut.

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2

COMMUNICATION

Unit Structure

2.0 OBJECTIVES

1) To acquire an understanding of the process of communication.
2) To acquire knowledge of the barriers of communication.
3) To acquire knowledge of the effective ways of communication in the classroom.
4) To practice the skills of affective communication.

2.1 CONCEPT, SCOPE, PROCESS AND BARRIER OF COMMUNICATION

What is Communication?

What happens if there is no communication, if the phone is dead, if there is a postal strike? Well, no communication takes place. The word 'communication' reminds us that without it we remain isolated, stranded on our islands, divided rather than united. The term communication is derived from the Latin word "Communis" which means to make common, to share, to impart, to transmit. Communication is passing information from one individual to another.

Communication is not just passing of information, but is an exchange of ideas, sharing ideas with one another. Communication means sharing of information in a mood of mutuality, It involves

interaction which encourages give and take. Communication is receiving and sending messages; understanding and being understood. The difficulty lies in the fact that we sometimes send confusing messages, saying one thing with words, another with actions, and we receive messages based upon our own expectations and our own feeling, sometimes reading into a message things that never came from the sender at all.

Communication is basic to human interaction and to forming each individual's personal and social knowledge. In this hyperverbal society aspects of communication are often neglected, ignored or undervalued. And yet we are moving into a post-literate society in which large portions of the messages we receive are conveyed through pictures or symbols.

Definitions of Communication:
According to W. H. Newman: Communication is an "exchange of facts, ideas, opinions, wishes and emotions between two or more persons".

According to G. Scott: "Communication is a process which involves the transmission and accurate replication of ideas ensure by feedback for the purpose of eliciting actions".

Objectives or purpose or goals of Communication:
Communication must have a purpose otherwise it is a waste of time and effort. The goals of communication may be as follows:

- to convey information: this may be done though words, gestures, pictures, symbols or actions.

- to ensure understanding: in other words, it involves giving understanding as well as being understood.

- to motivate.

- to establish better relationship. - to make learning meaningful.

- finally, communication expresses feelings and emotions. People in organizations, like people anywhere else, often need to communicate such emotions such as happiness, anger, displeasure, confidence and fear.

- to get some action done: communication is worthless if no action follows hence the purpose is to motivate others to action. This can also be done through persuasion.

When do we say that a message is communicated?
- when it is acknowledged, understood.
- reacted to responded.
- integrated into learning behaviour.

Process of Communication:

The communication model of Shannon and Weaver (1949), originally applied to the development of electrical system, can be and has been successfully applied to human communication. The model consists essentially of the following linked parts:

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SENDER>>>>INPUT>>>>CODING>>>RECEIVER>>>>DECODING
    |                                              |
DECODING                                OUTPUT/FEEDBACK
    |                                              |
RECEIVER>>>>SENDINGFEEDBACK>>>>CODING>>>RECEIVER
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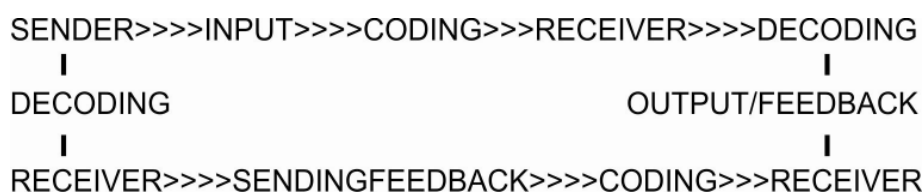
Let us examine this model in terms of classroom communication:

When conveying a message therefore there is a sender and the receiver: 2 dimensions. Purpose of giving a message is to get the other person to understand the meaning of the message and to respond. Therefore, in communication you have

The following are the components of communication
- Sender
- A Message
- Medium
- The Receiver
- Feedback

2.2 COMMUNICATION INCLUDES THREE ESSENTIAL ELEMENTS

1. It involves people and therefore understanding communication means understanding how people relate.
2. It involves shared meaning i.e. agree on definition of terms.
3. It is symbolic - gesture, sounds, letters, nos.

The sender: The sender is the agent who initiates the message. Any single message is necessary for any communication. The sender must keep in mind the following element in order that the communication may be effective, namely, who is he speaking to? What is he speaking? Why is he speaking? He should also keep in mind the what and how of his communication.

INPUT: The input in educational communication can be thought of as society transmitting its knowledge, skills, values, and standards to coming generations. The teacher supplies and manage the -, input'. In the case of school subjects' input is often accepted as the subject matter of a particular specialization, largely predetermined by an examination syllabus. This is a very limited view of the input,

teachers bring to the situation their own attitudes to the since subject, to life and society in general, all of which are also likely to be transmitted to the students.

Coding: Coding takes place when teachers put facts, statements, ideas, attitudes etc, in the form which. students can assimilate and thus learn from. Considering this in broad terms, messages are coded into the printed words, visual images or sound. These are modified, changed and reinforced by a variety of non-verbal messages. Coding is thus the process of making the desired input visible to the students and therefore teachers have the responsibility of seeing that the coding is such that the students is able both to receive the material and to understand and decode it.

Semantics is the study of language forms, and semantic problems occur when people attribute different meaning to the same words or language forms. Also the use of 'jargon' should be avoided unless the receiver is familiar with it.

Teachers make their ideas visible by coding them into a series of symbols which go to make up spoken or written language or pictures. The essential condition is that the student should speak and understand the same series of symbols including the specialized symbols associated with the particular subjects.

The Message: The communicator must first and foremost keep in mind that he himself is clear and what is the use of the message he is communicating. He should be able to express his message through appropriate symbols and words so that the receiver may receive the message that the sender intends. The message may be a statement made by the student or the teacher or it may be provided in a film, chart, picture or chalkboard illustration.

Ideally the communication channel carries both messages and counter messages - it involves initiation, reception and response.

Language: The language is the medium used to make clear and sure the information, hence the language used in communication must be common to both the sender and the receiver for the sake of effective communication.

Medium of Communication: This should convey the message to the student accurately. If a teacher is directly concerned, he may be using his voice as the MEDIUM of communication in conjunction with a variety of visual methods, the simplest of which is the chalkboard.

There are now available many varieties of audio-visual equipment which can be used either to aid the teacher or as a method of instruction without the teacher in group individual work by the students. On the visual side these range from simple aids - like the overhead projector and 35mm slide projector, to cine-projectors, video-recorders, video-disc players and computers. On the audio side the most versatile piece of equipment is still the audio-cassette recorder which can be used in conjunction with simple printed materials. When considering the medium of communication apart from the voice, one must not neglect the printed page.

This has many possibilities for presenting textual and diagrammatic materials, both as teacher support material and when designed for individual use as worksheets, programmed material or used with audio-taped material. The main consideration in choosing the channel of communication is that it should clearly and accurately convey the message to the student.

The meaning of the words: The word used for communication must have the same meaning for both the speaker and the receiver, because there are words that can have a variety of meanings.

Decoding and Output: The 'output' received by the student is not always that intended by the teacher who is giving the input. What is received will depend on a number of factors, including the student's previous knowledge of a subject. Teachers expect students coming from school to an institution of higher education to have a sufficient background in a subject to be able to decode the material presented. Students are also often expected to possess skills of note taking, writing up practical work and ability to use books and extract information from them, and to have acquired skills of argument and discussion. This is so often obviously not the case.

First the possession of a recognized qualification in a subject at school level is no guarantee that sufficient background of a subject is possessed. Part of the teacher's task when a student enters a course of instruction should be to determine whether a student does possess sufficient background knowledge and, if he does not, to help him to acquire it. As for skills of note taking, writing up etc, these also cannot be assumed, and teachers would do well to discuss these points with their students, providing help where necessary.

Receiver: When the receiver hears, he uses his ears and sees the physical expression and gestures of the speaker, so the sender has to keep in mind the listener's wants, desires and needs, likes and dislikes when he speaks to the other person.

Feedback: In order to make sure whether the receiver has received the message or not some sort of method has to be applied, such as question and consent.

The student is central to the communication process which in the formal educational setting includes teachers, books, audio-visual media and a range of resource materials and information sources. **'Medium of communication'** is for the most part those of sight and sound and should be arranged to convey the input of the student in as accurate way as possible. Feedback plays an essential part in regulating this. Feedback is an important part of any self-regulating system. Feedback from student to teacher giving, information on how the message has been received is an essential part of the educational communication process. Such feedback enables the teacher to vary the input depending on students response and so reduce or eliminate errors of decoding or factors caused by 'noise' in the system.

Educational communication process should not be for the convenience of the teacher: it should be for the benefit of the student. Now think of a communication taking place on a telephone. What happens when there is a disturbance or a NOISE?

Noise: In the original communication model, noise in the system was the sort of thing which renders a telephone conversation unclear or produces crackles on the line, masking the speech. The necessity for clarity and accuracy of message has already been stressed, by in teaching and learning there are many sources of noise which can mask or obscure the message, whatever channel of communication is being used.

The scope of communication also includes the movement of communication.

Movement of Communication: Movement of communication may be One-way or downward or upward, two-way, network, one to many. Down-ward communication: This process of communication flows from the higher level to the lower, which has become the most used channel for transmitting orders, instructions and directions. This type of communication can teach and explain new policies, Downward communication has the following advantages if it is done properly.

a. It provides an orderly medium for passing on policies, plans and orders.
b. It permits management to explain the reasons for the action taken.
c. It builds morale by keeping everyone informed.

d. It clarifies the rumors, which the receiver has heard through informal channels. It also discourages the less desirable grapevine taking place.

This process of communication is also known as one way communication from top to bottom. It provides no opportunity for response and feedback. Hence it becomes dictatorial communication.

Upward communication: This process of communication takes place when the receiver communicates with the sender. But this upward communication is often overlooked. In such communication the listener or the receiver or the audience has the opportunity to make known his ideas and opinions but it occurs in very rare cases. The upward communication has the following benefits:

a. It allows attitudes, feelings opinions and other information to reach to the management or the sender.

b. It provides for the check on the understanding and the acceptance of down-ward communication.

c. It satisfies the basic needs of the receiver to 'belong'.

d. It gives the receiver the feeling of participation in the conversation.

e. It also gives the management an incoming source for ideas and suggestions.

This upward Communication can be simply neglected by the person concerned and consequently the ideas, opinions and suggestions of the listener are considered to be unimportant. This is on account of the poor listening of the sender. He tends to give more importance to the style of informing, telling and commanding rather than asking, listening and interpreting. Hence in order to make upward communication effective, the sender has to play greater role in it.

Another barrier for the upward communication is the fear of the listener. He has the fear of reprisal, criticism and even the fear of being denied from being promoted. The fear even makes the listener hesitate from stating the facts to the person concerned. He has also the fear that if he suggests or criticizes the sender will be angry, therefore he holds back his genuine ideas. This is why it is essential that the sender creates such a situation, so that they could have an open and frank exchange of their ideas.

Horizontal communication: It is the process of communication 'in which the transmitting and receiving of the information takes place between the people on the same level of responsibility. And also it

is considered to be the strongest and the best of all flows in terms of information and understanding. Where such horizontal communication is existing, there exists little trouble for getting their ideas across to their colleagues. Such communication has the following positive effects.

a. It builds the understanding among the various personnel.
b. It gives the appreciation for the worth of each person.
c. it speeds up the communication specially when there is a common problem.
d. It also establishes an overall cooperative atmosphere.

Personal rivalries, ambitions, fighting and jealousy may become the block for the horizontal communication and thus there may be the absence of the exchange of the ideas and sharing of information.

2.3 BARRIERS TO COMMUNICATION IN A CLASSROOM SITUATION

When communicating, even in a classroom situation, often it is found that what is communicated is not received or understood by the receiver or student. The reasons are that often there are barriers or blocks in the communication process, which distort or prevent the communication from being sent or received. Below is a list of barriers experienced in classroom communication.

I   BARRIERS WITHIN THE CLASSROOM
1) **Physical Barriers:**
   - Class structure / arrangement
   - Overcrowding
   - Lighting and ventilation
   - Placement of B. B./teacher's desk
   - Display of charts, teaching aids
   - Physical discomfort due to uncomfortable seats

2) **Social Barriers:**
   - Seating position of students
   - Language spoken by students
   - Class community of students

3) **Psychological Barriers:**
   - Emotional problems of student
   - Intellectual capacity of student
   - Fatigue/restlessness/boredom
   - Dislike of subject/teacher
   - Poor retention/span of attention

- Fear of the teacher
- Inattention: failure to read the bulletin, notices, reports,
- Distrust of the communicator

II EXTERNAL INTERFERENCES OR BARRIERS:
- Noise (street, traffic, playground, other classes)
- Announcements
- Persons entering the class while the teaching is going on

III ASPECTS OF TEACHER AS A BARRIER TO COMMUNICATION
- Personality of teacher which is stern approachable.
- Technical language unexplained / tone / unfamiliar speed audibility / inaudibility of voice or too loud.
- Excessive verbalism.
- Referent confusion
- Unsystematic presentation
- Attitude of the teacher towards the students
- Manner of teaching
- Emotional imbalance
- Lack of motivation
- Fatigue
- Lack of class management
- Lack of use of teaching aids
- Conflict between the verbal and the non-verbal

Check Your Progress

1. How does the process of Communication take place?

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2. What are the barriers faced by a teacher in communicating with the students?

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2.4 FACTORS PROMOTING EFFECTIVE COMMUNICATION

How can a teacher ensure effective classroom communication?

There are a number of factors which promote effective communication in and outside the classroom. It is important for a teacher to be aware of these factors so that she can make her communication effective. Below is a list of factors which promote effective communication:

- use teaching aids
- subject matter to be organized
- use different methods
- deal with inattentive students
- make a sociogram of the class
- ask relative questions
- keep in mind the age level of the class
- the child's interest
- draw the attention
- keep in mind the principles of communication
- avoid lengthy sentences
- encourage children
- seating arrangements

Guidelines for positive and effective (classroom) communication

When the individual understands the importance of effective communication, he/she may use the following guidelines for influential communication.

1. The purpose of the communication must be clear in the mind of the communicator. If the motive of the communication is clear in the mind of the sender usually the message will be clear to the receiver.

2. The communicator must know the person with whom he intends to communicate i.e. he must know his background his/her interests' expectations and psychological level. This background knowledge will influence the content of the message and its delivery.

3. The proper and right approach should be employed either orally or written.

4. The communication should be specific and complete giving all the necessary information.

5. The sender must be enthusiastic and interested in communicating the message only then can he draw the attention of the other person.

6. Communication often occurs verbally and non-verbally, simultaneously. When there is face to face communication the sender must take special care to know that there is no contradiction between the verbal messages and between his/her gestures, eye contact, postures, facial expression etc.

7. Every message has its own time; hence the situation and the time must be kept in mind; while communicating, otherwise even a good message may not be effectively communicated if done at the wrong time.

8. Feedback always adds spice to effective communication and it may be either in the form of questions, comments, objections, ideas or thoughts about the message.

9. The message must be personalized because personalization makes the communication more effective as it touches the heart of the person concerned.

10. The key point for effective communication is self awareness. A person should become aware of his own feelings, desires, attitudes, He must be willing to share the relevant knowledge and feelings with others, he should be open enough to receive feedback to become aware of his strengths and weaknesses which only others can observe. Self awareness can be done through the following steps:

a) **awareness -** becoming aware of ones blocks or weaknesses. Agreeing that these blocks affect his communication.

b) **analysis -** after identifying his blocks it is desirable to make a study of how these obstruct communication, from where these blocks originate and to recall: the feelings which aroused when the block is in operation. One should also detect which habits strengthen the blocks.

c) **Removal of the block -** having become aware and identified the blocks it is necessary to remove these with a little guidance and encouragement from support persons these can easily be done and the person can become an effective communicator.

Check Your Progress:
i) How can you make your communication effective?

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2.5 TYPES OF COMMUNICATION

There are mainly two types of communication: Verbal and Nonverbal communication. It is said that most of the time in communication, the Verbal communication is about 7%, Non-verbal is 93%.

In the teacher's interactions with the students both in one-to-one situations, small groups and large groups, there is a good deal of information passing which is not necessarily concerned with subject content of the material. The verbal part of this is not just the spoken word passing from the teacher to the student, conveying an unambiguous message: the non-verbal part can also convey a vast variety of messages.

1) Verbal Communication:
Verbal communication could be reading, writing, speaking, listening, i.e. oral and spoken and heard or read.

1. Speaking <--> Listening: The interaction is face to face, as in listening to a lecture. There are occasions when the listener can share the feelings of the source in the same way as in the case of eye to eye contact. An example of this type of communication is listening to the radio programmes.

2. Visualization <--> Observing: In watching television the observer is physically separated from the product but can feel the impact of ideas conveyed. Communication can also take place more effectively by face to face contact with -the source as in the case of dramatization where facial expression and gestures produce a greater impact than in the earlier case.

3. Writing <--> Reading: The encoder is separated from the decoder, but can enjoy and appreciate the authors feelings.

The arrows both ways in all the three types of communication indicate that communication is interaction, sharing and circular or cyclic process.

Written: Letters, memos, reports, manuals forms (documents)

The Verbal communication may be in the form of teacher talk, pupil talk, questioning, answering, explaining, clarifying describing, furnishing information, giving directions, criticizing, justifying, initiation discussion, participating in the discussion, raising doubts, clearing the doubts, praising, encouraging, etc.

Oral: Informal conversation, group discussions, formal speeches, task related exchanges.

2) Non-Verbal Communication

Non-verbal communication popularly known as 'silent language, or body language'. Non-verbal communication includes movement, proximity, physical touch, facial expression, eye contact, gestures, posture, dress, cosmetics, voice qualities and tone of voice, laughing and yawning. Prof. Harold D. Larswell's questions sums up non-verbal as 'Who says what, in which channel, to whom with what effect'.

When someone speaks, he moves his head, his hands. perhaps his whole body. These and other non-verbal signals can give emphasis and force to a spoken message, and may often show more accurately that the person speaking really feels - especially if the nonverbal signal is in opposition to the spoken one. A simple example of this would be agreement when someone says 'yes' and nods his head to show his agreement. On the other hand, if people disagree but feel they must appear to agree, they may say 'yes~ and nods his head to show his agreement. on the other hand, if people disagree but feel they must appear to agree, they may say 'yes' but at the same time shake their heads in disagreement In this latter example, the person speaking may be totally unaware that he is betraying his true feelings by a non-verbal signal. The general emotional state of a person is often signaled by the tense or relaxed way in which that person holds himself. As with aspects of speech other than the awareness of the words spoken, teachers are often totally unaware of the non-verbal component of their communication.

What is Communicated by Non-Verbal Behaviour? There, are three main areas: 1. Supporting or denying verbal communication. 2, Taking the place of verbal communication. 3. Showing emotions and attitudes.

Head movements, such as nodding can be used as a reinforcement to someone speaking and may serve as encouragement to continue speaking. However if the listener begins to give a large number of small nods, it is probable that he wishes to interrupt the speaker and speak himself. Small, uncontrollable jerky head movements can show that the person observed is in a tense state in which he is unable to control himself. This may occur when someone is in a state of rage. Generally, people who are relaxed will make steady, easy movements.

Eye contact is a particularly important non-verbal skill which should be considered by teachers, since it can close the inter-personal distance between them and their students. Eye contact can be maintained for a long or a short time, and can be an open gaze or a furtive glance. Often, if a speaker is not looking at the person while speaking. By this means he is seeking information about how the message was received by the other person. Eye contact is not the only possible variation, the eye can be narrowed, indicating that the receiver of the message is puzzled or perhaps afraid.

3) The Teacher and Non-Verbal Communication:

Teachers may think that they communicate mainly through verbal means, whereas in fact they also communicate many non-verbal messages to their students. If teachers are aware of the non-verbal components of their teaching behaviour, then it is possible to have control over this.

Types:

Verbal - 7%	Non Verbal - 931/'o'
Listening - Hearing	Sign
Reading	Action-gestures
Writing	Object
Speaking	Symbols
Denotative	Kinesics
Connotative	Proxemics (use of time & space)
Understanding	
Remembering	
Attention	

2.6 QUESTION

1. What are the different types of Communication?

2. What are the different ways in which we can communicate nonverbally?

3) Differentiate between verbal & non-verbal communication.

2.7 CONCLUSION

To summarize, it is important that a teacher is aware of the process of communication. This helps her to convey relevant knowledge through an appropriate medium. A teacher should also have knowledge of the various physical, psychological, social, internal and external barriers which may hamper communication.

The teacher should use all appropriate tools and techniques to make class communication effective.

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3

TRANSACTIONAL ANALYSIS IN EDUCATION

Unit Structure

3.0 OBJECTIVES

After going through this unit, you should be able to;

- define transaction.
- define ego-state.
- define the different types of transactions.
- identify the types of transactions.
- discuss the characteristics of each ego-state.
- describe the characteristic features of each of the life positions.
- discuss the Educational Implications of Transactional Analysis.

3.1 INTRODUCTION

Education involves transactions. Learning is an outcome of transactions. An Individual's emotions, attitude, perception and behaviour are at play during transactions and they in turn influence the emotions, attitude, perception and behaviour of the individual transacted with. It is imperative to analyse the patterns of transactions for better and effective Communication

3.2 CONCEPT OF TRANSACTION

Transaction consists of a stimulus by one person and a response by another which response in turn becomes a new stimulus for the other person to respond.

Transactional Analysis implies the understanding of transactions by breaking them up into various components, namely:

• Ego-states.

• Transactions.

• Life-positions.

Check Your Progress

Read the following and state whether each one is a transaction or not with reasons:

1) Ram is reading a book.

_____

_____

_____

_____

2) Teacher asked a pupil, "Have you done your work?" The pupil said, "Yes I have."

_____

_____

_____

_____

3) Deepak says to himself, "I am tired."

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3.3 EGO-STATE

- A Coherent system of thoughts, feelings and behaviour.

The Ego-States:
Personality is made of three basic parts called Ego-states.

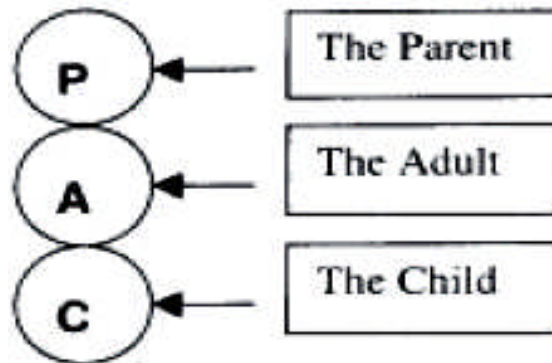The three personality states are Parent, Adult and Child.

Fig. 3.1 Three Personality states

The Parent: Recordings of imposed, unquestioned, external events perceived by a person between birth and age five taught concept of life.

Parent is specific for every person.
Data recorded without editing.
Rules, good / bad, are recorded as truth.
Full of Admonitions and very judgemental
Gets fragmented with discordant material.
Inconsistencies of elders are faithfully recorded.
Recordings of Parental dictates- an indispensable aid to survival
(Physical and Social)

The Adult: Recordings of data acquired and computed through exploration and testing. (Thought concept of life.) It is;

➢ logical
➢ rational
➢ clear
➢ prudent
➢ practical
➢ inquiring

- It is principally concerned with transforming stimuli into pieces of information and processing and filling that information on the basis of previous experience.

- It is a data processing computer.

- Helps in probability estimating that is it enables an individual to see the future implications of his/her present actions/behaviour.

- It is the referee between the demands of the Parent and the desires of the Child.

- It thinks, solves problems and mediates.

- The Child: Recordings of internal events (feelings) in response to external events. (Felt concept of life.)

- Primarily concerned with feelings.

- The feelings recorded could be positive or negative. Child is filled with desire.

- Child can be the most delightful part of the personality if it is free to be inventive, creative and spontaneous.

- Child can be a problem part of personality, if it is fearful, intimidated or selfish.

Check your Progress

I) Identify the ego state involved in each of the following incidents:

1. Seema desires a new car.

2. A person thinks before acting.

3. A teacher. is very spontaneous and uninhibited.

4. Raj gives information about a Historical monument.

5. Mahesh does not speak rudely to elders because he has been taught that it is bad manners

6. Maria does not eat outside food because her mother has told her so.

_____

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_____

II) What are the characteristic features of each of the three Ego states?

_____

_____

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_____

3.4 TRANSACTIONS

Interactions between people result in transactions. Transactions involve words, actions and the context. While analyzing transactions it is imperative to consider not just the words spoken but also the non-verbal para -interactions that accompany the words and the context.
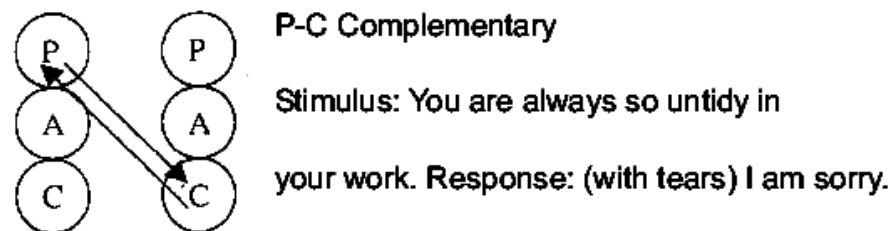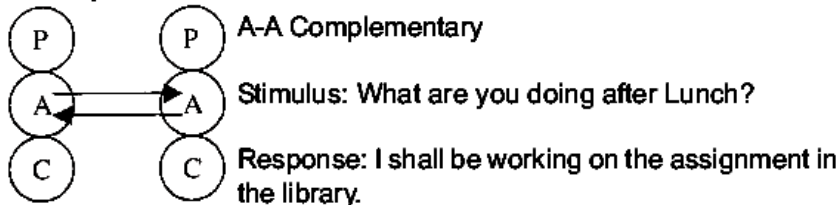
Types of Transactions:
When two people are talking, there are six people present: the Parent, Adult and the Child of each. The basic unit of conversation is the transaction. The purpose of transactional analysis is to determine which part of an individual, Parent, Child or Adult produced the stimulus and which part of the other individual responded. Two main types of transactions are identified:
• Complementary transactions
• Uncomplimentary or Crossed Transactions

1) Complementary Transactions:
When vectors of stimulus and response are parallel on the diagram, the transaction is Complementary and theoretically can go on forever.

Examples:

A-A Complementary

Stimulus: What are you doing after Lunch?

Response: I shall be working on the assignment in the library.

P-C Complementary

Stimulus: You are always so untidy in

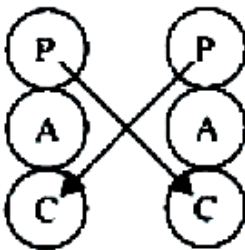your work. Response: (with tears) I am sorry.

2) Uncomplimentary Crossed Transactions:

When vectors of stimulus and response cross each other on the transactional diagram, it is called a crossed transaction and theoretically the communication stops.

Examples:
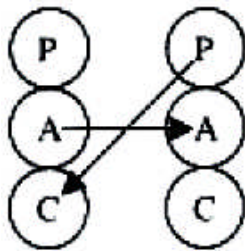
Stimulus: Have you seen, my book anywhere? Response: You should know to keep your books carefully

Stimulus: Will you complete your work quickly? It's late.

Response: Don't disturb me.

When the response is from the expected level .... I'm satisfied.
When the response is not from the expected level .... I'm not satisfied.
Therefore there is a cross.

Check Your Progress

Identify the type of the following transactions:

1) Stimulus: Which bus goes to the theatre?

Response: Bus No. 376

2) Stimulus: Which bus goes to the theatre?

Response: You always irritate me with this question

3) Stimulus: The trains are always late.

Response: The railway officials are never bothered about the comfort of the commuters.

4) Stimulus: I am scared of my teacher,

Response: You should not be scared of anyone.

_____

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_____

3.5 LIFE POSITIONS

The four life positions are as follows:

I'm OK, You're not OK - They are dominating, curbing, arrogant, condescending, ridiculing, satirical, very critical, authoritarian, argumentative, nit-picker.

I'm not OK, You're OK- Their characteristics are Low self esteem, low confidence, degrading self, putting others on the pedestal, trying to please others, self-pity, submissive, uncritical, low decision making.

I'm not OK, You're not OK- their characteristics are No confidence, no trust, self-pity, suspicious, mechanical, withdrawn, indifferent, cold, uninvolved, intropunitive, non-supportive.

I'm OK, You're OK - their characteristics are Self confident, trusts, proper self image, interactive, participative, assertive, considerate, open minded, creative, involved, encouraging, enthusiastic, non-threatening, professional, good sense of humour.

The first three life positions are unconscious, made early in life and based on feelings. The last life position is a conscious verbal decision and based on thought, faith and wager of action.

Check Your Progress
1. What are the characteristics of each of the life positions?

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3.6 EDUCATIONAL IMPLICATIONS

The three aspects of transactional analysis influence each other in the following way:
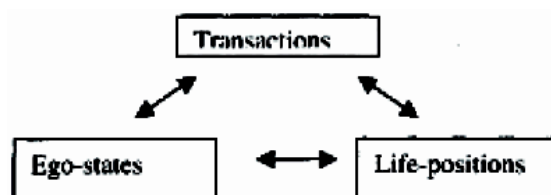

**Fig. 3.2 The three aspects of Transactional analysis**

The knowledge of P-A-C sensitizes a person to
• Understand transactions.
• Become aware of one's own dominant life position,
• Strive for the most desirable life-position i.e. I'm O.K, You're OX

The purpose of studying transactional analysis is:
• Better understanding of the Self.
• Better understanding of People.
• Better understanding of the Environment.
• Attitude building.
•Developing the Self, People and the Environment through effective interactions.
• Rational and analytical thinking.

Learning is influenced by attitude. The relationship between transactions, attitude and learning can be shown as follows:
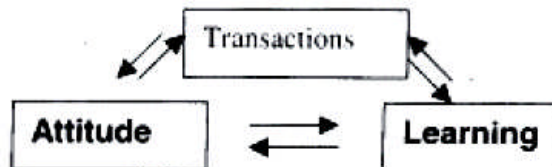
Therefore

• Encourage adult level transactions, through exercises that demand reasoning.

• Work towards building a healthy attitude towards the subjects through motivation.

• Use approaches/ methods such as the Project approach, heuristic approach, constructivist approach, brainstorming, simulations, etc.

• Use mass media and current affairs for discussion

• Models of teaching such as Jurisprudential Inquiry Model, Inquiry Training Model, Value Discussion Model can be used to develop adult level thinking.

• Stimulate the creative abilities of students.

Check Your Progress
1) What is the purpose of knowing Transactional Analysis?
_____

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2) What can a teacher do to help pupils become effective in transactions?

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3.7 CONCLUSION

Socrates once wisely said, "The unexamined life is not worth living." Transactional analysis provides the basis for a sound and objective examination of one's own life. The recordings of the Child and the Parent cannot be erased, but they can be turned off or modified. For this a conscious effort should be made to emancipate the Adult and prevent its contamination. An emancipated Adult can evolve the habits and create the energy required for learning.

3.8 QUESTIONS

1. Discuss the educational implications of Transactional Analysis.
2. State with examples the types of transactions.
3. What are the characteristics features of Ego state.

3.9 REFERENCES

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4

COMMUNICATON MODES: SPEAKING & VISUALISING

UNIT STRUCTURE

4.1 OBJECTIVES

The unit deals with modes of communication. It helps to

- gain comprehension about modes of communication
- understand different modes of communication
- differentiate between narration and explanation
- describe the aims and characteristic of good questioning explanation, narration and illustration
- identify the various kinds of questions
- frame different kinds of questions
- apply the gained knowledge in different / novel situations.
- classify various illustrations in proper category
- compare the various modes of communication

4.2 MODES OF COMMUNICATION

In teaching learning process communication plays a very important role. The communication channel must be kept wide open so that the teacher and pupil are able to communicate clearly, without interference. But this communication is neither single track nor uniform. It has to change, adapt and modify as per the need of the learner. Let's understand modes of communication in this regard:

Mode of speaking and listening:
In this type of communication, interaction is face to face which means the teacher and the taught are physically present in the learning centre. In this mode the learner can share the feelings with the teacher having eye to eye contact. It follows the social psychology of human cohesiveness. The learner is assured that his learning is as per requirement and also his doubts, assumptions, wrong notions are corrected and modified.

Let look into some techniques which could be used for this mode of communication.

4.3 NARRATION

Narration is an interesting oral presentation of some reference object or an incident in such a way that a mental picture is formed in the mind of the learner. In simple words we can say it is either t selling stories or giving accounts of events to other.

Definition: "Narration means recounting a series of event." Green and Barchenough

"Narration is an art in itself which aims at presenting to the pupils through the medium of speech, clear, vivid interesting and ordered sequence of events in such a way that their minds reconstruct these happenings and they live in imagination through the experience recounted either as spectator or possibly as participants, Panton.

4.4 CHARACTERISTICS OF NARRATION TECHNIQUE

1. Narration is an art. It needs to be developed. The more you use the better is the result.

2. The manner in which narration is done should be enthusiastic and effective, so that students gain complete information of the content.

3. The narration should be so powerful that it must leave permanent effect upon pupil's mind.

4. The vocabulary of the narrator should be enriched, varied and powerful.

5. Narration consists of powerful word-pictures-the very description should be able to sketch in front of the eyes of the learner.

4.5 HOW TO MAKE NARRATION INTERESTING

i) Have complete knowledge of subject matter so that fluency and continuity is maintained.

ii) Narration should be in accordance to the need of the learner, content and necessity. Irrelevant talk should be avoided.

iii) Let the voice be clear and loud but the tone soft and mellifluous.

iv) The language used while narrating should be clear, simple and understandable.

v) Add a dash of humour - it helps.

vi) The speed of narration should be according to the class-level. Too fast or too slow narration cause partial learning.

vii) For a successful narration have preplanning and practice in advance.

viii) Narration should reach the climax gradually along with a curiosity to know further.

4.6 ADVANTAGES OF NARRATION

1. A powerful narration discourages rote-memorization and cramming.

2. Narration develops curiosity and interest in the content matter.

3. Since gestures, change of speech and multi-sensory approach is used while narration, it breaks the monotony of the class.

4. Narration develops the listening skill - a very necessary skill which has lost its sheen and shine.

5. Narration develops imagination, a very important aspect of creativity.

6. Narration helps pupil gain knowledge in lesser time as compared to books.

7. Narration gives chance to enhance non-verbal skills: gestures, facial expressions, body language, posture.

8. Narration develops self-confidence, patience and self-control.

4.7 LIMITATIONS OF NARRATION

1. The technique of narration is teacher-centered. Most of the time the students remain passive.

2. Since the students have, only one task to perform while learning and that's listening its more likely that they may 'switch-off' while listening.

3. The narrator should have thorough knowledge of non-verbal communicative skill which is lacking in many teachers.

4. The interaction while narration is prohibited so many a time the doubt of students remain unanswered while the narration is going on, later they forget to clarify.

5. Narration requires logical and psychological sequence, which is missing in most of the narration done.

Check Your Progress
I   Fill in the blank
i)   Most often narration is done for .... and ....
ii) ....is important to have a class and vivid picture during narration.
iii) Narration is a .... centered activity
iv) While narration the voice needs to be .... but tone should be ....
v)   Narration is an .... needs to be developed.

II Which of the following topic can be taught through narration best.

Put (*) or (~) after each name
1. Coronation of Shivaji Maharaj
2. Blood Transfusion and Donation
3. Gautam Buddha
4. Volcanoes and Earthquake
5. Pythagorus Theorem
6. Discovery of Glass
7. The Battle of Panipat
8. Characteristics of living thing
9. Invention of Match box
10. Chemical Equation

_____

_____

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_____

_____

4.8 EXPLANATION

The learners who come to the class come with individual differences. They are heterogeneous in intelligence, learning, mental ability and emotional aspect. But the teacher imparts knowledge in a uniform way. To present the subject-matter in the simplified form before the pupil is called explanation skill. In other words, explanation is that technique in which a difficult thing is simplified. Explanation simplifies every problem, confusion and difficulty in such manner that the whole class may learn the matter easily. The content is clarified, divided at times broken into fragments, reconnected in order to make it easy for the learners. While learning the learner faces difficulty in understanding words, concepts, situation, sequence, operations, imagery, definition configuration etc. Thus explanation is requirement of all subjects at all level. In the absence of explanation technique presentation of the subject matter is not possible.

Definition of Explanation:
By explanation it is meant the process by which a word, phrase or statement is cleared away in all obscurity of meaning. A. H. Garlic

The skill of explaining is defined as an act of bringing about an understanding in some one about a concept a principle or a phenomena.

4.9 CHARACTERISTICS OF EXPLANATION TECHNIQUE

1. Explanation makes difficult things easy - problem, confusion difficulty is analysed.

2. Explanation is used in factual and informative part of the lesson.

3. Explanation is used in clarification of word-picture, imagery and philosophical situations too.

4. Explanation requires a lot of support in form of teaching aids and learning materials.

5. This is a teacher - centred technique.

4.10 HOW TO MAKE EXPLANATION EFFECTIVE

1. The explanation technique, while being used in the class needs to have a clearly stated aim. Before using this technique, we must have the complete knowledge of the content.

2. While using explanation, we must arrange our knowledge in logical sequence. This will not only simplify the content but connection, following, chronological order will clarify the concept.

3. Explanation could be made very effective by using variety of teaching aids.

4. The speed of the explanation should be appropriate because fast & speedy explanation ends up in confusion and slow & stretched explanation ends up in interest loss in the class.

5. Explanation should always have 'questioning' as their permanent partners - it leads to attention seeking and makes learner active partners in learning.

6. Explanation should have an effective and meaningful closure which means a quick recapitulation. This will help in revision and retention subsequently.

4.11 ADVANTAGES OF EXPLANATION

1. Explanation enables them to grasp the meaning and purpose of the material presented.

2. Explanation most of the time involves learners so they are active while learning.

3. Explanation uses a lot of audio-visual support which sustains interest, attention, and enthusiasm while learning.

4. Explanation encourages students to be logical and rational because of various links that is done in the process.

5. Explanation also develops vocabulary and its usage. Since the students understand the meaning of the words, they use It in their daily conversation.

6. Explanation is a multi sensory learning technique, so more attention more retention.

4.12 LIMITATIONS OF EXPLANATION

1. The students remain passive in this because this is a teacher centre technique

2. The technique expects too much from a teacher in all aspects planning, execution and evaluation.

3. Not all teachers are creative so they feel handicap when it comes to preparation of various aids

4. The technicalities of concept, phenomena and philosophies are abstract so understanding becomes difficult.

Check Your Progress

1. You have to explain sea-wealth to students of class V1. List all the teaching aids you require for the explanation of this

   _____

   _____

   _____

   _____

2. Fill in the blanks:
   1) 'Explanation is aoriented / centered technique
   2) The explanation makes the matter __for the learner.
   3) The teacher must have __ over the content for good explanation.

   _____

   _____

   _____

   _____

4.13 DISCUSSION

Discussion technique is a technique in which teacher motivates the pupil to think over some problems by asking questions. The teacher develops the lesson by asking questions and analysing the answers or the responses. As a result after the interaction, a change is likely to occur in the attitude, feelings and motivation of the pupils. The term discussion is used here to designate group classroom activities in which teacher and students consider certain topics or problems. It deeply and sincerely means thoughtful consideration of the relationships involved in the topic or problem under study.

There are two types of Discussion:
a) FORMAL DISCUSSION b) INFORMAL DISCUSSION

Discussions are organized in two forms, formal and informal

In formal discussion the matter to be discussed is highly structured, proper schedule is prepared and certain rules are followed. Teacher acts as a leader of the group.

In informal discussions, the subject matter to be discussed in unstructured. No fixed schedule is prepared and no rules are to be followed.

An outstanding student is selected as the leader by the group of students. He/She plans for the discussion and lead the discussion. Teacher is passive and supervise the pupils involved in the discussion. planning for discussion follows the below given steps.

1. Topic is decided for discussion
2. Objectives of discussion are decided
3. Time limit is fixed
4. Weightage point are decided
5. Penalty points are also decided

4.14 CHARACTERISTICS OF A GOOD DISCUSSION

1. Discussion needs to be led. Somebody must lead the discussion.
2. Discussion must not overlook important points that are related to the issue or topic.
3. Discussion should have / do have honest difference of opinion concerning controversial issues. The pros and cons of such problem should be fairly considered.

4. Discussion should clear misinterpretations and wrong notions in the process.
5. Discussion is democratic technique - everyone is free to exhibit their point of view, even though his point may be unique, single and in minority.
6. Discussion needs to be interactive - you must have many participants.
7. Discussion should have pre-determined objective.

4.15 HOW TO MAKE DISCUSSION FRUITFUL AND INTERACTIVE

1. Ask for others point of view or interpretation but avoid argument.
2. Get others to add ideas but never force them nor embarrass them.
3. Take into consideration every aspect or point even though its importance may be miniscule.
4. Write the points that have emerged after discussing each point on the board so that neither the direction is lost nor unnecessary things are discussed.
5. Never label any - one keeping the points of discussion in your mind - you will shut people; mentally and morally both
6. While the discussion the leader / conductor must do some spadework - facts and figures, visual representation, media cuttings should be brought to the class in order to support a point.
7. Don't let one or two persons dominate the discussion.
8. Make discussion lively and cheerful. Never end it on a note of animosity.

4.16 ADVANTAGES OF DISCUSSION TECHNIQUE

1. Since discussion has, many brains coming together, many ideas coming together the students participants gain deep understanding.
2. Many points of view come up in a discussion, it stimulates reasoning and logical thinking.
3. This gives chance for divergent thinking - people / participant are exposed to multi-approach to a particular problem.
4. The goals of co-operative behaviour and group living is achieved.

5. Since general information exchange is a core of discussion so the class has exposure to general knowledge and recent happenings,

6. It enhances, polishes and perfects oral expression - proper voice modulation and expressions are developed.

7. Discussion method encourages peer learning. Many students are very well read and are aware of various issues - hence peer learn from them during discussion.

8. Since wrong information misinterpretation and poor judgement are discussed and clarified - scientific temper is developed and enhanced in the process.

9. Discussion is a class participation - hence active and alive learning takes place.

4.17 LIMITATION OF DISCUSSION TECHNIQUE

1. All the children normally do not participate in the discussion. Only the extroverts from the core of the discussion group.

2. At times discussion ends up in chaos. The main topic is left aside and we end up all confused and lost.

3. In discussion at times personal scores are settled so if unattended it ends up in animosity and acrimony,

4. Discussion needs very fine handling; a bit of authority, a bit of coaxing authority, a bit of coaxing, a bit of wit, a bit of alertness a bit of class-control, a bit of democracy with authentic update information, Not all teachers are equipped with it.

5. Many a times discussion ends up without result.

CHECK YOUR PROGRESS
I   Fill in the blanks:
1. From the structural point of view discussion is a .... technique
2. There are two types of discussion; a) .... b) ....
3. Discussion stimulates .... and ....
4. We can expect .... participation in discussion.

II You have been assigned the job of aids awareness in a tribal area. What points would you keep in mind while doing the discussion with local people

1)   6)
2)   7)
3)   8)
4)   9)
5)   10)

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III. In the discussion process which of the following would you prefer.
Put a (**) against it.

1) Democratic Approach   2) Use of AV Aids
3) Autocratic control   4) Encourage the extroverts
5) Code of conduct   6) Reference Material
7) Free expression   8) A lot of guidance
9) Powerful vocabulary   10) Content Mastery

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4.18 QUESTIONING

Questioning enjoys special importance in clarifying and simplifying the subject matter. This tool is used by all the strategies and method. The success and failure of any method or strategy mainly depends upon "questioning" the famous Greek thinker and philosopher used to encourage powerful and effective discussion and probing through questioning only. The students should be encouraged for deep thinking and effective learning through

questioning. Remember that every person is not expert in asking questions. Questioning is an art; it needs to be developed. The famous author Rudyard Kipling said:

I Keep six honest serving man,

They taught me all I know,

Their names are "What" and "Why" and "When"?

And "How" and "Where" and "Who"?

Its only through questioning that thirst for knowledge and curiosity is nurtured. .-. Satisfied and quenched. This one skill of questioning has led to major inventions and discoveries. 'Why' does the apple fall down only? Made Sir Isaac Newton discover the law of Gravitation. 'How' do I test the purity of gold in the crown? - Made Archimedis discover the principle of Displacement. "Who" makes the kettles lid dance up and down? - made Eatt invent steam engine. So for rational and logical thinking for meaningful learning for change in behaviour, for active participation, questioning is very essential.

Some one said "A good teacher is not the one who has all the answers but the one who makes student ask the right questions".

Definitions of Questioning:
"Teaching means skillful questioning to force the mind to see, to arrange, to act."
<p style="text-align:center">THRING</p>
"Questioning is the key to all educative activity"
<p style="text-align:center">PARKER</p>
"No teacher of elementary or secondary subjects can succeed in his instruction who has not a fair mastery of the art of questioning.
<p style="text-align:center">COLVIN</p>

4.19 AIMS OF QUESTIONING

The questioning is used in the class keeping certain aims in mind:-

1. To test the previous knowledge and mental state of the pupils so that on the basis of existing knowledge, new knowledge could be given.

2. To locate the difficulties of the pupil while learning.

3. To increase motivation so that the attention of the learner could be caught for further learning.

4. To create interest and curiosity in the pupils for new learning.

5. To evaluate the comprehension of the pupil so that we can know what have they learnt and where lies the gap.

6. To arrest the attention of the pupil so that the learning becomes more organised.

7. To maintain discipline in all aspects of learning

8. To promote intellectual and social development which lies hidden in the content and needs to be translated.

9. To increase self confidence by removing the doubts and confusion of the learner.

10. To recapitulate the lesson and knowledge which has been learnt.

4.20 CLASSIFICATION OF QUESTIONS

On the basis of mental processes:

a) Memory Question b) Thought provoking Questions

a) Memory Questions: This type of questions are those questions which the pupils / learner answers on the basis of their memory. Such questions neither promote thinking nor rationale. They are simply to test your retention power.

b) Thought provoking Questions: This type of questions include those questions which the pupils answers with the help of understanding, ideas and imagination, logic and rationale, and application. To conclude we can say that thought provoking question does have memory as a base for information processing.

On the basis of purpose:

a) Training Question b) Testing Question

a) Training Question: With the help of such questions learners pupil are motivated to derive the results by imagination, thinking and reasoning so that they acquire new knowledge conveniently, Through such questions various mental processes are stimulated and new knowledge is given.

b) Testing Question: With the help of these questions knowledge and memory of the pupil/learner is tested. Such questions test previous knowledge and achievement so that we can assure their level of mastery.

On the basis of structure and answers

a) Essay type Questions b) Short answer type Question c) Objective type Questions

a) Essay Type Question: Essay type questions need elaborate, broad and descriptive answers. Here written expression use of vocabulary, fluency of language and expression. Organization of content matter is evaluated. While writing the answer the logic and sequential order is also important.

b) Short answer Type Question: Short answer Type questions are short to the point, objected to test information and understanding at a narrow point. Here vocabulary enrichment is not the criteria. To the point, brief and non-descriptive answer is expected here.

c) Objective Type Question: Objective Type Questions are those questions which have one or two word answer. It may be a supply type answer or choosing the correct alternatives from among the given alternative. Here memory is the key factor but if constructed creatively than other aspect of learning could be seen - logic, reasoning and applications.

4.21 CHARACTERISTICS OF GOOD QUESTION

i)   Realization of aim: A good question always ensure what will be the expected answer. In other words, the question should fetch us the aim. The answer to the question will be realization of aim.

ii)   Language of the question: The language of the questions should be simple, correct and clear. The language used should be in accordance with the intelligence level and exposure level of the students. Learners will never be comfortable with difficult and vague language.

iii)   Objective Based: The questions should be objective based. Before asking the question or framing it we must realize that what is going to be tested through questions-, information knowledge, comprehension, application, skill, expression or creativity.

iv)   Thought provoking essence: A good question should always enhance and activate thinking process. Cramming, rote memorization and memory-based answers should be substituted by logic, rational and understanding. A question can have information as a core and application in its periphery.

V)   Brief and Direct Structure: A good question should have brief structure and direct approach. A very lengthy and elaborated sentence structure creates confusion, vagueness and irritation amongst learner.

vi) Definite Answer: A good question should have definite answer. Anybody's evaluation of the question should not have extreme difference in the result. It provides objectivity to question and reduces bias and partiality.

vii) Proper Distribution: Good questions cover the whole class. They leave a very less chance for non -participation. They provide equal opportunity to one and all. Asking a few learners, the question will lead to passiveness in the class.

viii) Systematic: Good questions should be systematic. They should be connected to one another. They must give a lead to the answer which should provide base of next question,

Check Your Progress

1. Fill in the blanks:
i) Questioning is the key to all ....
ii) On the basis of mental processes questions can be divided into
   i) .... ii) ....
iii) .... questions have normally a word or two to supply as answers.
iv) Good questions should be .... based.

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II. Read the following paragraph and prepare the questions as per instruction:

Web giant Google and incendiary "Muhammad Cartoon" have more than 2.7 million search hints. Google - which self-censors in order to do business in China - and the toon tumult point to a need for smart sensitivity in exercising freedom of expression. Social Media, Google or the news paper that printed the cartoons must exercise responsible judgement whether they flex their information muscles in free markets while they operate in countries with cultures that are far more restrictive.

Lack of such judgement was seen in a xyz newspaper published in last September depicting a dozen cartoons which hurt the sentiments of a local group.

Based on the above Para,

Prepare
1) 3 MCQ questions
2) 2 testing questions
3) 3 thought provoking question

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4.22 ILLUSTRATIONS: VERBAL AND NON-VERBAL

Visualizing - observing is another important mode of communication. This mode is often used to communicate nonverbally. Facial expression, body language, gesture and postures are visualized and observed. Graphics, pictures, signs and structure do also have observation as a mode of communication. Various educationist have done deep research to confirm that such mode of communication have been more effective for learner and they have retained such matter for a longer period of time.

Illustrations:

In such mode illustrations play a very important role. Let's see what do we mean by illustration. Illustration means that material with the help of which the contents are made interesting, understandable and clear. Illustrations include anything which makes an appeal to the senses and the imagination of learner, stimulates interest and curiosity of learner and hence makes a piece of description or reasoning clear.

Definitions of Illustration

"Comprehend the total field of mental imagery whether stimulated by word pictures or recourse to physical material is called illustrations". ANONYMOUS "To make clear, intelligible or apprehensible, to elucidate explain or exemplify as by means of figures comparisons and examples is known as illustration technique". Anonymous

4.23 TYPES OF ILLUSTRATION

i) Non Verbal Illustrations:
    a) Specimen, concrete materials
    b) Models
    c) Maps, charts, graph
    d) Diagram
    e) Pictures, photographs

ii) Non-Verbal Illustrations:
    a) Analogies / comparisons - to clarify a concept
    b) Anecdotes / stories - to drive a point
    c) Similar / word pictures - to derive hidden meanings.

4.24 OBJECTIVES OF USING ILLUSTRATIONS

- For stimulating interest and curiosity among learners.
- For stimulating imagination
- For explaining abstract concept
- For making a concept clear, understand and memorize
- For observation and experimentation.

4.25 HOW TO USE ILLUSTRATIONS?

1. The illustration used in the class should be easy, correct and clear. In short it should be simple and to the point.

2. The illustration should be interesting and alive. It should keep the learning flow and mellifluous.

3. The illustration should always be related to the lesson. It should concentrate on the core or essence of the lesson.

4. While using the illustration, the point should be pre-decided where to use it. Use it timely.

5. In one learning session there should not be many illustrations otherwise the charm of the learning gets lost or fades away.

6. While learning, if possible, we should use visual/verbal illustration.

7. The variety factor should be kept in mind while using it, Creativity, variety and vividness should be the key factor.

8. While using the illustration ideally the maxim of known to unknown should be used. This will generate interest and arrest attention.

Check Your Progress

1. Below given are a few sub topics. Write next to each topic which verbal or non-verbal illustration you would use and why?

Illustration Reason

1. Parts of flower
2. United we stand
3. Communication Network in India
4. Comparative rainfall of Asian countries
5. Structure of an eye
6. Appreciation of a poetry paragraph
7. Writing style of P. H. Deshpande
8. Seals of Harrapan Civilization
9. Greatness of Akbar
10. Rocks and soil

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4.26 LET'S SUM UP

1. Modes of Communication: Speaking and Listening

    Visualizing and Observing

2. Speaking and Listening Mode:

    a) Narration: Definition
    *   Characteristics of Narration Technique
    *   How to make narration interesting
    *   Advantages of Narration
    *   Limitations of Narration

    b) Explanation: Definition
    i   Characteristics of Explanation Technique
    *   Advantages of Explanation
    *   Limitations of Explanation

   c) Discussion:- Types of Discussion:- i) Formal ii) Informal

- Characteristics of a good discussion

- Advantages of Discussion Technique

- Limitation of Discussion Technique

   d) Questioning: & Definition

- Aims of Questioning

- Classification of Questions: on the basis of mental processes:

   a) memory question b) testing question

Purpose: a) training question b) testing question structure and answers:

   a) essay type question b) short answer type question

   c) objective type question Characteristics of good question

3. Visualizing and Observing- Illustrations

- Definition

- Types of illustrations

   i) Non-Verbal Illustrations

   a) Specimen, concrete materials

   b) Models

   c) Maps, charts, graph

   d) Diagram

   e) Pictures

   ii) Non-Verbal Illustrations

   a) analogies / comparisons

   b) anecdotes / stories

   c) similar/word-pictures

- Objective of using illustrations

- How to use illustration

4.27 QUESTIONS

1. Explain the modes of communication described in this unit.

2. "Narration can make social science learning interesting and lively" - Justify the statement.

3. What are the advantages of explanation technique? What are its limitation.

4. Describe the characteristics of a 'good' discussion? How would you classify a class discussion? Why?

5. Differentiate between essay type and objective type question? What are aims of questioning?

6. What are the characteristics of 'good' question?

7. What are 'verbal' illustrations? How is a story different from anecdote?

8. What precautions would you take while using illustrations.

9. Give one definition of each one of the following:

   i)   explanation ii) questioning iii) illustration

4.28 SUGGESTED READING

1. Kumar K. L. (1998):- Educational Technology

2. Rawat Dr. S. C. (2004):- Essentials of Educational Technology R. Lall Book Depot, Meerut

3. Sampat K. et. Al (1998):- Introduction to educational Technology

4. Oberoi Dr. S. C.& Technology of teaching Saxena Swarupn C (2004) R. Lall Depot. Meerut.

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5

COMMUNICATON MODES: READING, SPEAKING & DISTANCE MODES

Unit Structure

5.1   Unit Objectives
5.2   Introduction
5.3   Reading and Speaking mode of communication
5.4   Distance mode of communication
5.5   Summary
5.6   Questions
5.7   Reference

5.1 UNIT OBJECTIVES

After going through this unit you will be able to:

- state different modes of communication used for effective communication.

- explain the role of print material, i.e. textbooks, reference books & journals.

- discuss distance modes of communication with respect to a role of mass media (radio, T.V. etc.) and satellite communication (internet, online learning).

5.2 INTRODUCTION

Communication modes are the methods used by the teacher or communicator to convey ideas or messages within the classroom to the learners. In order to be an effective communicator, the teacher needs to use the following modes of communication.

MODES OF COMMUNICATION		
SPEAKING ↕ LISTENING	VISULISING ↕ OBSERVING	WRITING ↕ READING
Forms	Forms	Forms
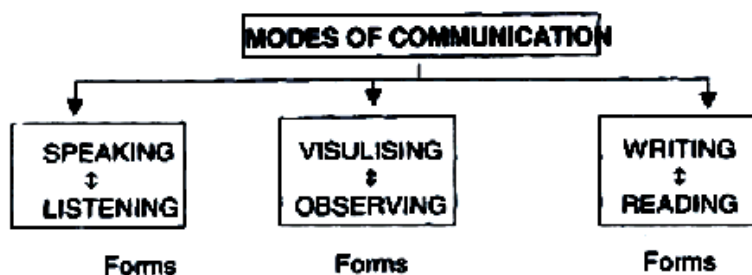
1. Questioning	1. Gestures	1. Textbook
2. Explanation	2. Postures	2. Reference books
3. Discussion	3. Facial Expressions	3. Journals
4. Conversation	4. Body language	4. Print materials
5. Narration	5. Multisensory approach	

5.3 READING AND SPEAKING MODE OF COMMUNICATION

You have already seen 'speaking & listening' as well as 'visualising & observing' modes of communication. We will now discuss, print material, textbooks, reference books and journals as mode of Reading and Speaking.

1. Print Media:

Among the various mass media, print can be considered to be the FIRST BORN. Radio, films and television came much later. Compared to other electronic media, print has its weak points. It lacks the human voice, which is present in other three media. Print media requires that the reader is literate and asks the reader to be conscious in assimilating what he has read. Print media includes a rich variety of productions, Books, magazines, newspapers, pamphlets, posters, brochures, calendars, cards, labels - in fact everything that comes out of a press constitutes print media.

2. Text Books:

In education, textbooks are the oldest type of learning materials that are being used at present also. A textbook is a manual of instruction r a book containing a presentation of the principles of the subject used as a basis of instruction. It is used by students as a learning material.

Characteristics of a Textbook:

1. The textbook must be prescribed or approved by the competent authority.

2. It is normally printed and illustrated for the intended age group.

3. It is not only a learning material but also a teaching device

4. It is a common measuring rod both for teachers and taught indicating to the former what they are required to teach and to latter what they are supposed to learn.

5. It also reflects the changing concept of education, emerging social needs & aspirations.

Uses of Textbook:

1. The textbook is used both in formal and informal situations of instructions.

2. It is used in situations of classroom teaching or self-study.

3. It furnishes the scattered bits of knowledge in a concentrated form and systematic as well as sequential units.

4. The textbook gives a.-visual impression of the subject matter read by pupils and ensures better retention.

5. Textbook provides a constant flow of information, allowing sufficient time for reading at one's own speed and interest.

Limitations:

1. Textbooks are traditional and stereotyped learning materials which do not allow free thinking, innovative ideas.

2. At times textbooks becomes dry, clearly lacking interest and motivation of learners.

3. Very often textbooks became outdated & superfluous due to implosion of knowledge and information.

4. Reference Books & Journals

For effective teaching learning process, it is desirable that textbooks should accompany reference books and journals. Reference books and journals are suggested as a supplementary learning material,

Uses:

1. They provide extra guidance about the additional matter of the content.

2. They are helpful for coverage of important units.

3. They acquaint students with the latest development in the content.

4. It helps to understand the content clearly.

5. They are written by experienced authors.

The teacher should guide the pupils in the way the reference books are to be consulted or the index is to be looked up. Some good students might like to go deep into particular subject. Various

reference books such as encyclopaedia, dictionaries, authoritative and standard works, Yearbooks prove very effective aid in learning. For the success of new methods of teaching, it is necessary that the pupils know how to consult reference books, how to sift relevant information for preparation of assignment.

Check Your Progress:

1) Name the materials that constitute Print Media.

    _____

    _____

    _____

    _____

    _____

2) Write any two characteristics, uses and limitations of textbook in a tabular form :

    _____

    _____

    _____

    _____

    _____

Text Book -

CHARACTERISTICS	USES	LIMITATIONS
1.	1.	1.
2.	2.	2.

3. State whether correct or incorrect:

    a) Textbook is the only print media widely used in classrooms.

    b) For effective teaching learning process, supplementary reading material is a must.

    c) Reference books does not provide details and latest development about the content.

    Key : a) True b) True c) False

5.4 DISTANCE MODE OF COMMUNICATION

A. Mass Media:

The term mass media stands for dissemination of information ideas and entertainment by the use of communication media. Media includes modern means of communication such as radio and T.V., film. the press, publications and advertising. These co-exist with important traditional media such as folk dance, drama and puppetry.

Mass media have come to play a fundamental role in modern society. The mass media are media of communication newspapers, magazines, T.V., radio, films, video's, CD's & other forms that reach mass audiences. Mass media instruments carry messages quickly to audiences so large that they cannot be gathered together in any one place at any one time.

Media can be divided basically into two categories:
i) Print or newspapers, magazines and books.
ii) Electronic or radio, T.V., sound recordings, motion pictures & internet.

Functions of Mass Media
The four main functions of mass media are:
Influencing - Informing - Entertainment - Providing market for goods and services - advertisement.

a) Influencing:

Mass media has a profound effect on public opinion. Radio, T.V. and newspapers are powerful media which can cast a strong influence on the minds of the people.

b) Informing:

Information dissemination i.e. sending vital information across a large section of public is another important function of mass media. Mass communication media make it possible to deliver messages to millions of people at roughly the same time.

c) Entertainment:

Mass media's major focus is on providing entertainment. In this world of internet and T,V. technology, mass media plays a vital role in providing entertainment.

d) Means for Advertisement:

In this jet age world, mass media plays a prominent role 'in providing means for marketing of goods in the form of advertisement.

1. Educational Radio:

Radio is the simpler and more economical technology to meet India's economic, social, linguistic and geographical requirements. Today radio sets are available to people in almost all villages in the country.

Characteristics of Educational Radio:

Following are some characteristics that contribute to its potential:

1. Easy accessibility:

In comparison to other media, radio is accessible to the majority of our countrymen. Low cost transistors within the easy reach of even the economically weak people are available in the market.

2. Wide coverage:

The radio can extend learning at a distance as it can easily and quickly reach the isolated rural audience.

3. Low capital investment and operating cost:

Radio technology is comparatively cheap in terms of installation and production of radio broadcasts. It is quite economical and needs less production facilities.

4. Easy learner reception:

Radio broadcasts can be listened to even while one is doing some manual work. Distance learners can listen to programmes from wherever they desire to.

5. Effective thought promotion:

Radio initiates the thinking process of learners as listening is invariably accompanied by simultaneous information processing.

6. Motivate supportive facilities:

The feeling and motivation of listeners can be stimulated and directed by music and other sound effects. (By supportive facilities we refer to music, special sound effects and such other means that make a broadcast programme effective.)

7. Easy production:

Production of creative radio programme is simpler. No complicated mechanism, nor any sophisticated instruments are needed for such production. It requires less man power as compared to production of T.V, / video programmes.

8. Effective recreation / transmission of reality:

A powerful 'audio' version brings a scene into sharp focus. A live broadcast can make listeners share the experience of a scene of reality taking place.

9. Feasible mode of learner-enrichment:

The most common function of media in education is 'enrichment'. This function is easy to materialize with the help of radio & with relatively little expense.

10. Direct Instruction:

The use of radio has also been tried for direct instruction.

Limitations:

1. It is not a flexible medium. There is no face to face interaction, dialogue or discussion between the listeners and the speaker producer.

2. The doubts / queries arising in the mind of learner cannot be attended to immediately. Thus, there is no provision for immediate feedback to the learner.

3. It may not be effective medium for all types of course materials.

4. There is shortage of adequately qualified personnel for producing worthwhile educational programmes.

5. The span of attention of a learner is short and thus retention of factual information given is generally low unless some special efforts are made to reassure attention from time to time.

2. Print Media:

Print media is principal medium in the mass education scheme. The chief advantage is that the print medium is adaptable to many different learning environments, it is economical and it has been traditionally used.

Disadvantages:

1. It demands skills of literacy.

2. It is almost a one wcy communication process where immediate teacher-learner and learner-learner interaction is not possible.

3. It does not facilitate active learner participation.

4. It does not support individualised instructions.

5. Print media cannot provide means for development of psychomotor skills.

3. Television

Television should be considered as the most exciting and efficient means of mass communication created by human endeavour in the field of pure and applied science. Unlike radio broadcast, television transmission has the added advantage of all-important visual experience, which is made more dynamic and meaningful by the movement and sound associated with the visual

experience. Television has a more profound influence on the education of a child and its impact is now begun to be felt in our major cities. Television when utilized in education is know as "Educational or Instructional Television".

* Class room utilization of educational television program.

The classroom utilization of educational television program involves the following consideration

A] Physical environment

A program is useful if it can be seen and heard properly. Seeing and hearing however depends on the following

i. A viewing room should be such that there will be enough space to accommodate the audience. It should be always free from outside noise and ventilation is equally important and glare or reflection must be avoided.

ii. Television must be located away from extreme moisture or dust. It must be moved away from one place to another only when it is absolutely necessary.

iii. Expert technicians should carry out maintenance of television.

iv. For maximum visibility, the television set must be placed at a proper height.

v. Pupil must look at the screen from the normal eye line i.e. at 30".

B] Program utilization depends on

i. The willingness of teacher to make full use of the education television program.

ii. Achievement of concrete results through this medium.

iii. Adequate time should be allowed for preparation a follow up activity.

iv. Clear statement of objective.

V. Explanatory notes of what the program hopes to achieve.

vi. Suggestion to pupils for supplementary reading.

vii. Watching of programs should be without interruptions.

Advantages

1) In classroom instruction, television as an aid offers mainly opportunity to achieve the following -

a) More involvement and greater variety in dissemination of ideas and knowledge.

b) Thorough details in research and structured programming in the communication process.

c) Increased retention of information usually accompanied by increased motivation to learn.

2) Television as multimedia - Television is capable of carrying different kinds of symbol which originate through varied media like speech, music, sound effect, pictures, diagram, cinematic, gesture and more.

3) Bring out real events as it actually happens.

4) Outcome uncertain

5) Transmit a wide range of audio-visual materials, including still pictures, film objects, specimen etc.

6) Saves the time and effort and cost of setting up classroom projection equipment.

7) Mass medium

8) Foreign language can be taught effectively.

9) Television lesson once recorded on the videotape can be repeated number of times.

10) To observe the instructional methods and ideas of their experts and increase his own knowledge of teaching method.

11) Television is the only teacher in the classroom

12) Use of best available teachers to teach a subject for a large number of student viewers.

13) No special arrangement.

14) Quick and lasting visual, which can often reduce the time necessary to teach an idea or technique.

Limitation of Television

1) Television screen is too small in size.

2) Equipment necessary are costly and complicated.

3) May not suit the school timing.

4) It can never supplant the teacher but will supplement his/her teaching.

5) In the absence of interactivity viewers may merely watch and hear passively.

6) If the time limit of video is too large then viewer can lose their attention.

7) The programs are made for an average learner, In reality, there is no 'Average' learner

8) Individual differences are not taken into account.

9) No control over the viewer,

10) It is not possible to control the pace of information both visual and verbal.

11) Distraction due tr, poor quality of the program, transmission and reception may result in barrier to learning.

12) Television times are fixed unless planned in advance, it may not result in any benefit.

B. Satellite based Communication:

The recent development in educational broadcasting in India is the emergence of the satellite-based communication. It has opened the door for a new era in audio-visual communication. The 'Satellite Instructional Television Experiment' popularly known as SITE established that the remotest rural masses can also be approached through satellite based T.V. programme. Thereafter INSAT-1A & INSAT-1 B have provided us with the means to strengthen distance education systems in India.

The prime objective of INSAT service is to bring the rural and backward areas into the national main stream, by quickening the development activities in these areas with mass media support. Therefore, the service is aimed at making rural masses aware of the latest development in the areas of agricultural productivity, health & hygiene.

Some of the main advantages of satellite-based communication systems can be summarised as follows:

1. Geographical Coverage:

In India where geographical and other factors add to the difficulties in establishing a nationwide network, ' satellite communication have proved more relevant and effective. It has capacity to beam TV signals over larger distances and even in mountain areas where terrestrial system cannot serve.

2. Impetus for Modernisation:

The technology of satellite communication is very helpful in promoting faster social development. By bringing the world to the villages through television, the communication system has opened the window for innovation and change and thereby quickened the process of modernization.

3. Immediacy in Implementation:

The satellite communication system being a centralised system, the planning and implementation of educational innovation

requires a minimum amount of time. It can reduce the implementation time of any educational scheme.

4. Cost Effectiveness:

The characteristic of the satellite to cover large masses spread over a large distance makes it more cost effective.

C. Online and Offline Resources:

Computers can be used in distance learning by two modes:

- Local mode or Offline computer
- Transmitted mode or Online resources

In transmitted mode one computer is connected to another computer which is 'on-line' and then the operation depends upon communication between these devices. By interconnecting the computers, a complex learning network can be developed which could link all distance learners with their teachers and with a central institution.

1. Internet

The internet can make real difference in teaching and learning in the school. Using Internet effectively one can enhance and enrich classroom experience. It has contributed by affecting future lives, their work and entertainment.

Advantages:

• Information is exchanged via global communication.

• Information can be retrieved just in time for use in the classroom. Body of knowledge is being added from time to time. Students have a lot of fun browsing the ideas, thoughts & creation of others.

• Internet represents real world examples of integrated knowledge and represents different topics.

• Students explore internet resources; they discover how the information they are accessing fits into real life.

• Logging into internet, student can chat live with experts & gifted teachers, other experts in various fields.

• Internet can cater to different learners in different way like good library. Internet has print, sound, photography and video resources. Access round the world via internet helps to locate documents, pictures, sounds to keep one's knowledge, skills and curriculum up to date.

• Students can gain knowledge about the rich diversity in humanity & wide variety of knowledge in the planet earth.

2. E-Mail:

The full form of e-mail is electronic mail. It is transfer of mail from one computer to another. It is an important facility provided by internet.

When any user requests e-mail service provider for-this facility email service provider allots some space on the desk in central computer where user's e-mail is stored, This place is called mailbox. Each mail box has an address called e-mail address. If the user wants to send e-mail to anyone then he has to know his e-mail address. E-mail is off-line communication. In e-mail we send the mail to anybody on his address to his mail box.

Colleagues in university and colleges communicate with their counterparts, weakly or daily via e-mail when their institutions are separated.

3. Chatting:

When two internet users exchange their data at a time it is called online communication or chatting.

In on-line communication message sender and message receiver both are connected to internet at a time. The message sender types his message and it shows on monitor on receiver's computer. This type of facility is called chatting, Meeting may be held from different cities, countries etc with the help of on-line communication.

4. Website:

A website is designed to publish on internet different information about someone, his profession and facilities provided by him. To use the provided service by internet, user has to take some place on server. For this he has to pay some fees per year. Some servers provide this facility free of cost. This place is called website. Each website has an address.

Website information can be read only. Today many new papers and magazines have published their websites on internet. One can gather much information by surfing them.

5. Social Media:

Social media such as Facebook, Twitter, Google Plus, and Flickr, as well as open social practices such as blogging, are being used in learning for the purpose of convenient communication with other students and potentially with others outside the class such as students of the same topic and subject experts. Many social media, as commercial endeavours, are attractive in that their features often surpass those of internal

firewalled environments. The fact that these media are generally open to the world implies a need to carefully consider the risks of openness as well as need for ongoing communication with students in order to address their concerns and deal with issues in the use of social media as they arise. These risks are counter-balanced by the benefits of open discussion and academic debate in authentic online environments.

Check Your Progress:

A. Complete the sentences:

1. The four main function of mass media are ..., &..........

2. Educational Radio: involves .... sense of learner.

3. Educational Television involves .... sense of learner.

4. The advantage of educational T.V. is - a) social equality of education,

b) Flexibility in the programmes, c) cost-effectiveness, d) All the above.

5. The main purpose of Mass-media is - a) to educate all b) to disseminate information, c) to develop interaction, d) to create learning conditions.

6. Educational T.V. is used in - a) correspondence study b) distance study c) both of these d) none of these

Key 1) Influency, informing, entertainment, provision 2) audio 3) visual 4) d) 5) a) and b 6) b

B. State True or False:-

1. The internet system have overcome the barriers of time, place, social & economy.

2. E-mail, websites, chatting are facilities which can be availed without internet system

3. Satellite based communication is highly individualised.

4. Educational T.V. involves more than one sense of learning.

5. Educational T.V. is more effective than internet.

Key: 1) True 2) False 3) False 4) True 5) False

5.5 SUMMARY

In this unit we have seen the various modes of communication with reference to reading and speaking. In reading skill, we have seen print media, text books and have understood their characteristics. We have also seen reference books and

journals which are a form of supplementary learning material and its uses. We later saw the distance mode of communication which includes a large genre of mediums like magazines, radio, television, motion picture etc. We have studied each in detail and have understood how it can influence, inform, entertain and advertise. We have briefly seen their limitations and disadvantage which have got us to think critically to how to change these drawbacks into advantages. In this unit, we also studied the satellite-based mode of communication which has the advantage of global coverage which leads to global communication that reflects how well multicultural ideas and recourses can be shared. It covers emails, websites, chatting and social media.

5.6 QUESTIONS

1. Discuss the online modes of communication & state its advantages.
2. What is satellite based communication? How is it cost efficient?
3. State & explain the advantages & disadvantages of television.

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6

INSTRUCTIONAL MATERIAL FOR MULTISENSORY LEARNING
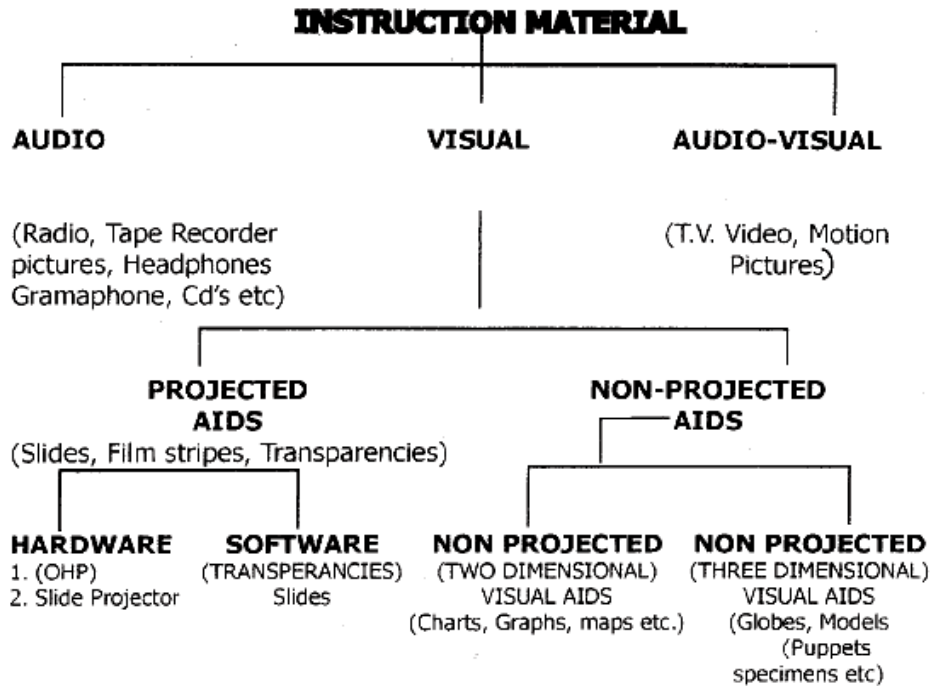
Unit Structure

6.1 UNIT OBJECTIVES

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

- classify the type of Instructional Material.

- differentiate between audio, visual and audio-visual instructional material.

- state the characteristics, uses and limitations of Instructional materials.

6.2 INTRODUCTION

Imparting instruction is an important function of education. It can be done through so many materials. Our senses eyes, ears, tongue, nose and skin are the gateways to knowledge through instruction, More the senses are used, better is the Instruction. The materials that we use for imparting instructions are Audio, Visual and Audio Visual materials.

6.2 TYPES OF INSTRUCTIONAL MATERIAL WITH ADVANTAGES AND LIMITATIONS

INSTRUCTION MATERIAL

AUDIO

(Radio, Tape Recorder pictures, Headphones Gramaphone, Cd's etc)

VISUAL

AUDIO-VISUAL

(T.V. Video, Motion Pictures)

PROJECTED AIDS

(Slides, Film stripes, Transparencies)

NON-PROJECTED AIDS

HARDWARE
1. (OHP)
2. Slide Projector

SOFTWARE
(TRANSPERANCIES)
Slides

NON PROJECTED
(TWO DIMENSIONAL)
VISUAL AIDS
(Charts, Graphs, maps etc.)

NON PROJECTED
(THREE DIMENSIONAL)
VISUAL AIDS
(Globes, Models
(Puppets
specimens etc)

PROJECTED AIDS

INTRODUCTION
   Projected aids are the aids which helps us to show the image of the materials in its enlarged form on the screen.

DIFFERENT PROJECTED AIDS
Projected aids are of various types they are as follow.

PROJECTED AIDS

SLIDES   **FILM-STRIPS**   **FILMS**   **TRANSPARENCIES**
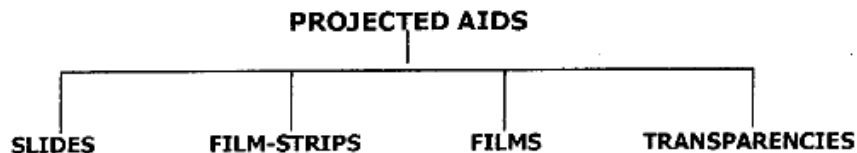
Fig. 6.1 - Types of Instructional Material and their characteristics

- Audio Aids: The student gains knowledge using Sense of hearing.

- Visual Aids: The student gains knowledge using Sense of sight

- Audio Visual Aids: The student gains knowledge using both sense of hearing & seeing.

1) SLIDES

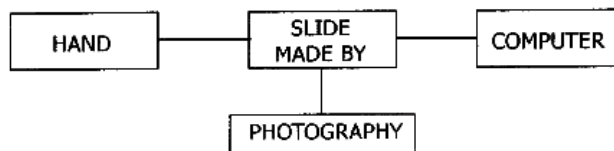A slide is of 2" * 2" size. Slides can be prepared manually of photographically.

Fig. 6.2 - Makes of Graphs

Characteristics:
1. Transparent surface.
2. Shown frame by frame at a slow rate taking care of the slow learners.
3. Referred to move than once in the same sequence.
4. Colouring the information on them as to create the intended add on effect.

Uses:
1. Great educational value.
2. Effective educational aids.
3. Arouses the interest of the students.
4. Attract the attention of the students.
5. Helps to develop the lesson.
6. Facilitates student - teacher participation.
7. Easily handled.

Limitation:
1. Easily damaged.
2. Comparatively more expensive.
3. In long run it becomes bulky to store the slides.
4. Slide shows are not repeated.

2) FILM-STRIPS

The Film-strips are strip of film on which a series of pictures are imprinted in a fixed sequence.

Characteristics:
1. Low consistency of duplication.
2. Compactness.
3. More visuals.
4. Projection on the screen are always up right on the horizontal format and all the visuals are in the correct orders.

Uses:

1. Provides a structure for the subject
2. Arouses the interest of the students.
3. Attract the attention of the students.
4. Viewed effectively.
5. Handled easily.

Limitation:

1. Lacking audition.
2. Comparatively expensive.
3. Information presented must be accurate in accordance with the matter that appears on the strips.
4. Film-strip is prepared no re-arrangement is possible later on.
5. All the frames on the films-strip should be in the same direction.

3) TRANSPARENCIES

The letter size on a 25cm *25cm transparency should be that its projection on a 1m square screen should be a minimum of 20mm. The letter size should therefore be 20*25/100=5mm.
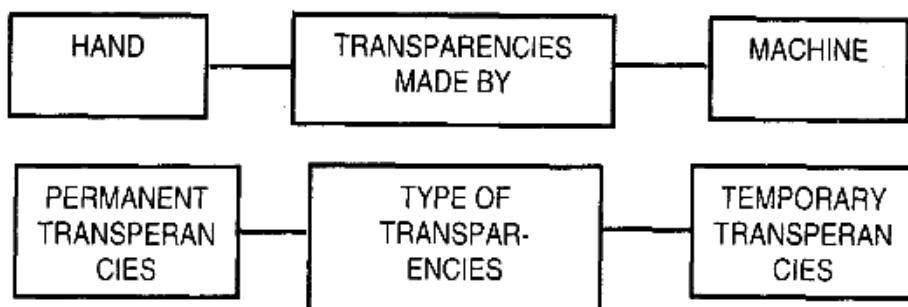

Fig. 6.3 – Makes and Types of Transparencies

Characteristics:

1. Hand-made or machine-made readily.
2. Maintain face to face contact with students.
3. Prepared in advance with graphics.
4. Made in different colours.
5. Using transparencies is less strenuous and less pollutant than using a chalk.
6. Reused by employing washable colour marker wholly or partially.
7. Referred to back and forth in the same or in different sessions,

Uses:

1. Practical help in drawing the attention of the student to the screen when desired.
2. Used to create different learning effects useful to show complicated diagrams step by step, monograms, design curves sequences of steps interacting elements and components graphical solution of problem to summarize and to evaluate a lesson.
3. Photocopy handed.
4. Used in a variety of ways.
5. Reused.
6. Referred to back and forth in the same or different direction.

4) NON-PROJECTED AIDS

There is much sense in Chinese saying that "A thousand hearing are not so effective as one seeing." Wordsworth has also realized this fact and he put it in his own poetic way saying, "Things seen are mightier than things heard." The devices used to explain with such aids that label of two-dimensional aids which is shown as below.

The sayings are highly relevant to the cause of using visual aids. Visual aids which do not require any projection for their presentation are called Non-Projected Aids.
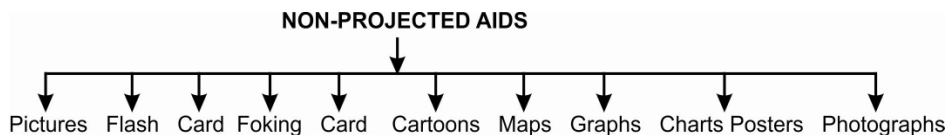
NON-PROJECTED AIDS

Pictures Flash Card Foking Card Cartoons Maps Graphs Charts Posters Photographs

Fig. 6.4 - Types of Non-Projected Aids

5) FLASH-CARDS

Flash cards can be in the form of words, sentences, pictures and poster.

Characteristics

1. Aims to develop the power of observation, identification, quick comprehension and retention.
2. Provide an easy and simple medium of communicating a message.
3. Usually involve photographs and other types of still pictures and are the simplest of all aids.

Uses

1. Used as a single card or a whole series of cards for the presentation of an idea.
2. Help to communicate a message.
3. Help to develop the power of observation and identification of the students.
4. Used to develop the power of comprehension and retention of the children.
5. Purpose of using flash-cards is to provide pupils with a systematic approach to drill.
6. Used to teach recognition by sight.

Limitations

1. Easily damaged.
2. Lacking audition.
3. Should not be used for a prolonged period as it becomes boring to children.

6) POSTERS

Posters are pictures meant for the emotional and aesthetic satisfaction of the viewers along with a message or an idea.

Characteristics

1. A picture or drawing designed for display to convey a message or idea and to create a strong lasting impression.
2. Satisfies the viewer emotionally and aesthetically.
3. Tells the story vividly with the desired effect.
4. A simple and dynamic medium at a glace of presenting a message in a compact from.

Uses

1. Able to motivate the students.
2. Helps to communicate the important events or the message or the idea quickly.
3. Add atmosphere to the situation.
4. Create a strong lasting impression through the emotional and aesthetic satisfaction of the viewers.
5. Usually pleasing.
6. Increasing the interest among the student.
7. To publicise important school and community event.
8. To present an idea forcefully.
9. To compel attention by some attractive features.

Limitation

1. Lack audition
2. Not very easy to have appropriate design, unity and effect of the posters.
3. Making posters is a time - consuming process.

7) MAPS

There are varieties of maps such as picture maps, political maps, physical maps, historical maps etc.
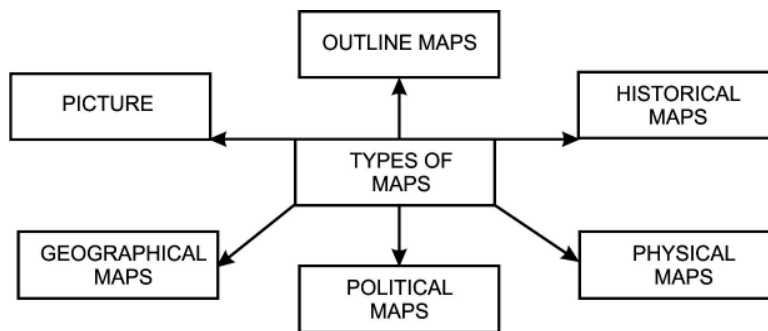

Fig. 6.5 Types of Maps

Characteristics:

1. An accurate representation in a diagrammatic form.
2. An outline map should be used if a close view of particular section of the detailed map is required.
3. Classification of points and compilation of necessary data derived from the map.

Uses:

1. Help to show precision in relation with space.
2. Use of posters, charts, pictures, photographs and models are made for illustration purposes.
3. Helps individual to study the problem in detail, but specific instructions must be provided to locate the information.
4. Shows the physical or political features providing for locating the information.

Limitations:

1. Lacking audition.
2. Easily damaged.
3. Sometimes it is not handy.

8) GRAPHS

The Graphs represent the numerical data in visual form
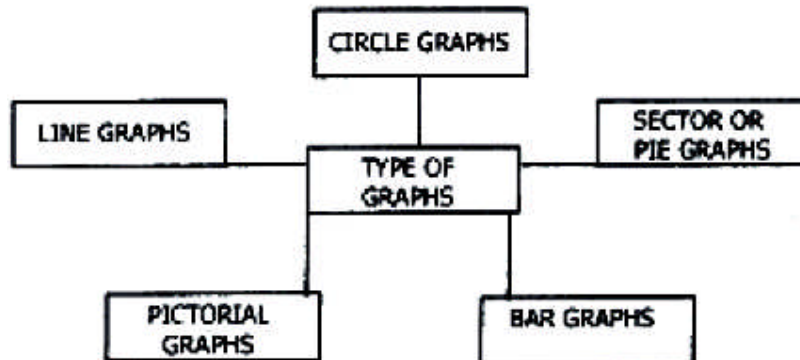

Fig. 6.6 Types of graphs

Characteristic:

      Graph is fundamentally a tool for expressing number relationships, which is much easier, to visualize than can be done if the statement were made only in words and figures.

Uses:

1. Depict the facts clearly. 2. Help to show the numerical data in a visual form. 3, Help us to compare the facts in a judicious way. 4. Useful for showing quantitative data in a visual form.

Limitation:

1. Lack audition. 2. Require basic knowledge of statistics. 3. Sometimes they make teaching "dry" and more "formal".

9) CHARTS

      Charts are a combination of graphics and pictorial media to visualize the relationship between main ideas or facts.
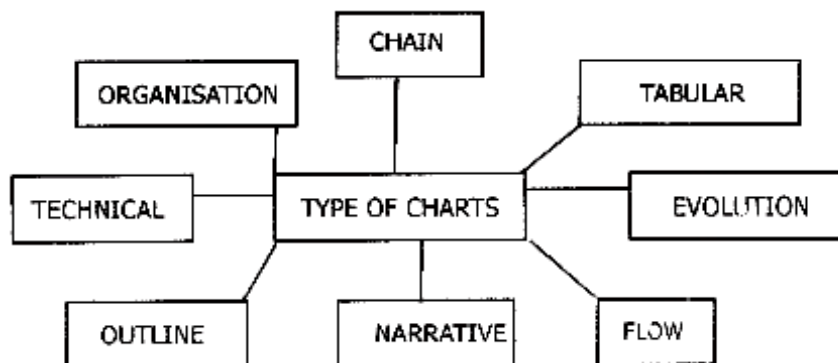

Fig. 6.7 Types of graphs

Characteristic:
1. Big enough to be seen by the whole class.
2. Clarity.
3. Simple.
4. Employ colour with discretion.
5. Tell the truth.
6. Title must be clear and attractive.
7. Present visual ideas or concepts.
8. Presenting material symbolically.
9. Encouraging utilization of other media of communication.
10. Gives a neat appearance.

Uses:
1. Show the relationships between main ideas or facts.
2. Summarise the facts
3. Helps to classify the facts
4. Help to supply detail information of brief. eg. The students' progress charts
5. Shows relationships such as comparisons, relative amounts, developments, processes, classification and organization
6. Visual ideas or concepts.
7. Understand the hard topic which is in oral form in a better way using the help of a chart.
8. Show information in list, pictures, tables and diagrams.
9. Use for motivating the student.
10. Use to show development of structure.

Limitation:
1. Difficult to store chart properly (i.e. chart should be stored flat not folded and not rolled.)
2. Lacking audition.
3. Teaching becomes more formal if the charts are not attractive.
4. Ineffective if it is not sufficiently large to be seen easily.
5. Either be laid flat that is horizontal storage or suspended which is vertical storage. In either case storage should be by size and not be content.
6. One of the differences is that the written matter cannot be erased.
7. Shown in quick succession.
8. Not contain too much written material.
9. Not contain too many details.

Check your progress

Q.1. Write the appropriate type of Instructional material (Audio, Visual Projected, Visual Non projected or Audio-visual aids) besides the following.

Name of Instructional Material	Types of Instructional Material
Transparencies	
Video	
Tape Recorder	
Charts	
Cartoons	
Film strings	
Gramophone	
Flash Cards	
T.V.	
Posters	

Q.2. Write uses and limitations of any three Non projected aids.

_____

_____

_____

_____

_____

Q.3. Write the educational significance of
i) Charts ii) CD's iii) Models iv) Television

_____

_____

_____

_____

_____

6.4 SUMMARY

In this unit we have seen the different types of instructional material along with their advantages and disadvantages. We have covered the characteristics, uses and limitations of slides, firm-strips; transparencies, non-projected aids, flash-cards, posters, maps, graphs and charts. we have seen and understood each of their precise use in classroom and in the learning process.

6.5 QUESTIONS

1. Discuss the types of charts & discuss its characteristics
2. What are maps? Where are they used?
3. What are non-projected aids? State & discuss various non-projected aids.

6.6 REFERENCE BOOK

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7

GROUP LEARNING

Unit Structure

7.0 OBJECTIVES

After regarding this unit, you will be able to understand the following.

- Meaning of Group Learning

- Various forms of Group learning such as lecture workshop, Dramatization, Brainstorming & Simulations

7.1 INTRODUCTION

For effective learning many new methods have been introduced. In group learning there are so many areas, following are some of them. As against individualized learning, it is learning by group in which many students learn at a time.

7.2 LECTURE METHOD

In the past, when the group of learners gave way to big number of students or bigger audience, discussion method proved to be inadequate, and in its place came lecture method.

Though this method is not child centred and keeps only the teachers, or more precisely the lecturer, busy and active, yet the

method is more common in colleges, universities, and even in higher classes of schools.

It pre-supposes an active classroom and is open to so many demerits. When the learners are not interested in studies and feel bored, tired, and afraid of the teacher. In the colleges attendance by proxy is so common, the college teachers do not know, who is who. The college teachers are only interested to impart knowledge to the students & complete the said syllabus in a given time.

This method is not according to the principles of teaching. In this method learners are passive and there is no interaction between pupils and teachers while delivering the lecture. There is no problem solving, observation, analysis or evaluation involved in this method. There is no place in teaching learning process in this method. The teacher is particular to finish a topic in double periods, while the students are passive, bored, afraid and dull.

This method can be used in following ways:

1. To Motivate:
The teacher can present major points and aspects of the study. New topic or new subject unit more effectively through a lecture method. He can encourage the students for learning, and solve their problems, and this way arouse the curiosity of the pupils, who would feel more motivated for later activities as a result of this method.

2. To Clarify:
The pupils generally stuck up and are troubled by the same similar difficulties i.e. unit, chapter, problem etc. in the course of the study. This method can be used to save their time. The situation may call for a review, synthesis, interpretation or may need a new consideration. A short lecture will at such stages help in clarifying the issue and thus result in a lot of saving of the valuable time of teachers and pupils which can be utilised for other useful learning purposes.

3. To revise:
After completing a chapter or unit students need guidance regarding the salient points covered in the chapter or lessons. At that stage, a teacher can in a short talk or lecture, point out the main ideas of the chapter just covered. The teacher can summarise and thus guide the pupils. These would be indicated in the lecture for revision.

4. To expand:
A teacher must know how to relate the experiences to the class needs in an interesting manner. How can we add much more

information than supplied by textbooks? So, the teacher is called a true textbook.

Merits of Lecture Method

1. It is economical, as it needs no laboratory, apparatus, materials, aids or even a big classroom.
2. The work of the teacher becomes simple. He / She has to put in lesser efforts in preparation of a lesson.
3. It is good to give factual information and in relating some of the thrilling, historical, biological incidents in a lesson.
4. It serves an example of good oral expression.
5. Lecture can be adopted to the interest, aptitude, abilities previous knowledge and to needs of the pupils.
6. It ensures adequate preparation for the pupils. It has its influences on learners.

Demerits of Lecture Method

1. Students are mostly sitting in passive manner. It does not encourage pupil's activity.
2. It is against the principles of learning by doing.
3. There is no way to know the reactions of the pupils.
4. They may not follow lecture properly and taking notes may not be easy for them.
5. The teacher may be too fast for the learner to grasp the lime of thought.
6. In this method more courses may be covered by a teacher but less learning may take place.

Lecture

The communication between the students and teachers must be effective in order for lecturing. The teacher should organize his/her lecture in such a way that the students take an active participation in the learning process.

The following guidelines will help the teacher conduct an interesting, effective lecture and promote student's participation.

1. Prepare a lesson plan.
2. Before beginning the lecture, ensure that all students are attentive.
3. Outline, the main points at the beginning and the end of the lecture.

4.   Speak loudly and clearly.
5.   Make eye contact with the students.
6.   Avoid speaking in monotone.
7.   Include an element of surprise whenever possible.
8.   Repeat and emphasize important points.
9.   Keep the language at the student's level of understanding. Be sure to clarify any terminology students are unsure of.
10. Involve students in the lecture by asking questions and encouraging a brief discussion.

7.3 DEMONSTRATION METHOD

In demonstration method the teacher explains the detailed of the experiment which he performs before the students. The active participation of the students is needed in it. Talking about various ideas abstract is not easy to grasp, while concrete things get fixed up in the mind of the students. Thus, the maxim of "From concrete to Abstract" is followed in this method. Students draw conclusions after seeing the demonstration.

Demonstration can prove useful if teachers make through rehearsals. If demonstration fails, the students get a very bad effect. If failures are repeated, the pupils lose all confidence in the teacher and in their own capacities.

Qualities of Effective Demonstrations:

1. It should be planned in detail.

2. The various precautions to be observed should be kept in mind.

3. If all details are not worked out in advance, it is better to postpone it some other day. Performing it in incomplete for adverse manner is not good.

4. Sometimes even a very well-planned scheme of experiment fails, that occasion should be utilised by the teacher in a very intelligent manner.

5. He should turn it into a problem for the whole class.

7.4 SEMINAR

Meeting or series meetings of specialists who have different skills but have specific common interest and have together or training or learning purposes. The work schedule of a seminar is aimed at enriching the skills of participation.

A seminar is form of academic teaching, normally at a university in small groups where students are requested to actively participate during meetings. This often has to be done by presenting a paper in a class and also in written form. Normally, participants must not be beginners. The idea behind the seminar is to confront students with the methodology of their chosen subject and also to familiarise them with practical problems that might crop up during their research work.

Seminar means a form of class organisation in higher education in which a group of advanced students engaged in research or advanced study meet under the general direction of one or more staff members of the college or university for discussion of problems of mutual interest.

Seminar research is an advanced course in which the content and method emphasize the promotion and interpretation of research, combines the benefits of group discussion and group evaluation by specialists and associates with encouragement and opportunities for individuals to plan and evaluate investigations of their own.

Seminar or Colloquium

A colloquium is a class organisation usually at the graduate level in which a conference related to advanced research project constitutes the essential part of the class activity and serves as a means of planning, executing and evaluating progress on research projects.

Its Working

1. Individual, as well as group projects are taken up in a seminar. Reports are written by participants there.

2. Reports are discussed and criticism takes place. Participants ask clarifications from the individual reporter. Thus group interaction and learning go together.

3. It trains in planning, organising, collecting data, reporting and evaluating process. It is a self learning, as well as group activity. It develops expression, cooperation, problem-solving and evaluation. Independent and original study can also be carried out in this way.

Teacher is a leader in socialised learning, He has to be well prepared and trained for this responsibility.

7.5 WORKSHOP

An arrangement under which special facilities includes particularly a wealth of source material and specialized personnel for group and individual conferences are provided by an educational institution for individualized or small group study for education. Problems that are of special interest to advanced students of education or a teacher in service, frequently provide in such area a curriculum, administration, guidance, higher education and secondary education.

"Workshop" means any premises, room or place, not being a factory, wherein any manual labour is performed, or for the purpose of a gain in or incidental to any process of making, altering, repairing, ornamenting, finishing or adapting for sale any article or part of an article, and to which or over which premises, room or place the Employer of the person or worker work it.

Definitions of Workshop:
Workplace where handicrafts or manufacturing are done a brief intensive course for a small group, emphasizes problem solving.

A workshop is a room or smaller building which contains tools and/or machinery for making or repairing things.

1. It is an in-service improvement activity planned and carried out by teachers and administrators to attack and study problems of such scope, that many are interested in,
2. They are important vehicles for in service growth, a professional workshop is a gathering of teachers. Supervisors and consultants to discuss cooperatively some professional problems facing the participants.

Characteristics of Workshop:
1. It is a place where teachers solve teaching problems.
2. Cooperative work is important. Common problems can be solved in a united way in teachers
3. There are no group assignments in a workshop.
4. Many creative activities are made possible
5. All the work in a workshop is evaluated
6. It lays emphasis on interchange of ideas.
7. Committee work is an important item here.
8. It increases professional growth among teachers.

Time table for Workshop:

Some schools use workshop throughout the whole / part of a year, with sessions of three or four hours, usually one day per week, say on Saturday afternoons. It is planned as an experience lasting over a period of several weeks, so that there is sufficient time for independent study in groups or as individuals.

Guidelines for Workshop:

1. There should be a competent faculty or consultants and resource persons.

2. Planning should be done about budget, location designing, work areas and arranging ways in which staff may work.

3. The location should be at a suitable open place

4. The whole staff should be involved in it.

5. Finance should be available for smooth working.

6. The problem selected should be real ones.

7. Small work groups should be formed for working.

8. Individual and group work should be possible.

9. A reference library is very important.

10. Effective means of evaluation should be available.

11. Follow up programme should be outlined by participants.

12. Specific steps to be taken should be known.

7.6 DRAMATIZATION

Strictly, the recasting into dramatic form of a story or other material not already in dramatic form, loosely and incorrectly used to designate the acting out of a story or any piece of literature or the acting out of an item to be learned.

Dramatization is an innovative program which helps teachers in the use of dramatization techniques in teaching/learning process. The teachers use several techniques through dramatization like storytelling, play acting, mono acting, question answer sessions, use of table and story boxes, activity-based storytelling, use of various types of dolls, masks, crowns, effigies, several low-cost materials effectively, to make the child understand and concretize abstract concepts.

Dramatic Participation:

Dramatization means substitute for real experience of reconstruction of the original reality. There are many things we cannot possibly experience at first hand. There is great value of

dramatization in education. Students can participate in a dramatization or watch some kind of dramatization. Both are valuable experience but participation is much more meaningful and closer to reality than only watching.

Dramatic acts are quite popular in languages and social sciences. In sciences also the scope is not limited. The films made on the work of various scientists are only possible because of dramatization. Such films are quite effective as such experience & are otherwise not possible.

Students of primary and middle classes participate in scientific dramatized act in schools. Such activities are also brought to science fairs etc. some very abstract and uninteresting ideas are taken for dramatization, for example, different students act as various components of solar system with proper costumes, dialogues, songs, music, and dance, and the abstract, concepts become clear and leave a long lasting impact on participants and viewers, students act as various petroleum products and explain how they are formed and utilised like coal, petrol, Vaseline, synthetic rubber and plastic etc. Functions of vitamins and other components of food can be taught through dramatization.

It is also possible to use dramatization in classroom teaching where costumes are not necessarily required but different students can remember their parts and act out in the classroom. Interdependence of various components of an ecosystem and balance of nature can also be explained interestingly through dramatization. An imaginative science teacher can think of many such topics which can be taught more effectively through such activities.

Thus, dramatization can become an effective teaching aid in teaching science.

7.7 BRAINSTORMING

Brainstorming is a superior technique for generating ideas. This technique is used for generating any and all possible solutions to a problem, encouraging students to come up with creative, exciting and radical ideas without fear of criticism, generating spontaneous reactions to an issue and/or finding solutions to specific problems.

How:
1. Divide the class into small groups (ideally five students)
2. Assign a recorder within each group
3. Present the issue or problem to be brainstormed.

4. After the students have had sufficient time to generate ideas, list all the ideas for the whole class to see. The teacher should encourage "Piggybacking" on one another's ideas.

5. Discuss ideas and possible solutions.

Important Considerations:

1. The problem or issue to be brainstormed should be identified and presented to students in simple language.

2. Groups of three to eight members should be formed so that individuals can "hash out" ideas within a small group.

3. There are some basic rules which should be enforced.

   a) Record all ideas. Brainstorming does not

   b) Do not hesitate to express ideas that others may think to be radical.

   c) List all ideas on the chalkboard.

4. Encourage "off the wall" ideas but at the same time do not force ideas. If a student or group runs out of ideas, brainstorming is complete.

5. Set a somewhat flexible time limit and let students know when their time is running out.

6. Remember that brainstorming, although effective, is only part of the problem-solving process.

7.8 SIMULATION

Meaning:

Simulation is a constructed situation which is identical to the real situation, which helps the trainees in equipping themselves with the experiences in real field without entering in the real field. Simulation is the controlled representation of reality.

Role-Play:

The idea of role play, in its simplest form, is that of asking someone to imagine that they are either themselves or another person in a particular situation. they are then asked to behave exactly as they feel that person would.

From this deceptively simple concept spring a large number of alternative approaches. To begin with, role-players may take on the roles of imaginary people, real people or themselves. They may find themselves playing opposite one or more people who may similarly be taking a wide range of parts, including possibly playing themselves or even the role player.

Situation may be simple or elaborate, familiar or strange. They may be described in detail or left to the imagination of the role-player. The action may be played out fully and last for days. It may be a fragment and last for minutes. The learning which takes place may be first-hand or second hand. It may be acquired by participation or observation. At the end of a role-play therefore it may only be necessary to ensure that the session is brought to a reasonably close.

Role-player	imaginary person
	Real person (a) outside learning group
	Self (b) within learning group
Situation	Simple, one to one
	Complex Familiar / New
	Detailed Outline,
	Short / Long
Learning	First hand (participative) / various (observed)
	Skill, techniques,
	Sensitization
	Attitude change

The process of role-taking is a natural and continuous one for anyone who is socialized within their community. It is a serious matter, most of our social life consists of such activity and failure to adapt to the right role at right time can lead to a breakdown in communication. A conversation, for example, depends on each person anticipating the other feelings, expectancies, thoughts and probable reaction to their own behaviour.

A person's role will change throughout their life and indeed throughout the day.

The wife says good morning to her husband.
The children have breakfast with their father.
The postman delivers to an address.
The police officer directs the motorist.
The shopkeeper greets a customer.

Similarly, person may be wife, children, postman etc., their behaviour at the given movement will indicate to others which role they are playing and they in turn will adjust that behaviour to comply with that they feel others expect.

Role-Playing:
The concept of role-playing derives from this everyday activity. In roleplaying one is practising a set of behaviours; which is considered appropriate to a particular role. As a technique, role play has proved to be very powerful. It is natural therefore that when we want to teach subjects which involve interpersonal

behaviour, we should turn to role playing as a potent teaching technique.

It can be used at different levels to teach simple skills of communication to show how people interact and their stereotyping of others and to explore deep personal blocks and emotions. Before using role play as technique to aid learning, we should be clear in our minds that we are not dealing with the therapeutic aspects as used by the psychotherapist, nor with prepared or improvised drama, nor problem solving case studies.

The main use of role ' play is to enable the student to experiment with interaction as it occurs in the real world. There is unfortunate confusion between role playing and acting. The essential difference is that acting consists of bringing to life dramatist's ideas (or one's own ideas) in order to influence and entertain an audience, whereas role play is the experiencing of a problem under an unfamiliar set of constraints in order that one's own ideas may emerge and one's understanding increase.

The purpose of role play is very different. Role players are not concerned with an audience only with themselves and other role players. The idea of role playing is very simple to give students the opportunity to practice interacting with others in certain roles.

Role play - lives of Ancestors

How:
When students act out the lives of their own ancestors, they must research and interview people in addition to acting. Role playing ancestral lives and lifestyles brings to the life the people and events and flavour of the past.

How:
1) The teacher should have students brainstorm ideas as to what this person would experience (sights, sounds, feeling, smell etc) during his/her typical day.
2) The teacher should divide the class into groups of about four students. Students should be given sufficient time to discuss what they have discovered about the community's history.
3) Each group will present its skill to the class. Students should make use of any appropriate costumes and/or props if they are available.
4) Time should be allotted for questions. They may require students in the audience to prepare questions, the teacher should encourage discussion between group members.

Important Considerations:

1. The teacher should not emphasize quality of acting. It is what students learn from the performance which is important.

2. The following questions are helpful to keep one's mind whether one is role-player or part of the audience.

   a) What does one's experience in a typical day that there ancestors would not?

   b) If one were suddenly transported to the time and place of the role play how would one adapt? What would have to give up? What would one gain?

3. If possible, a guest who lived during the period should be invited to see the role play.

4. Students develop a greater appreciation and understanding of history if their activities are supplemented with life experience.

7.9 SUMMARY

In this unit we have understood what is meant by group learning and the different ways in which group learning is possible. We saw methods like lecture method, demonstration method, seminar, workshop, Dramatization, brainstorming, and simulation. In each method, we saw its merits and demerits along with its uses. For methods like workshops, we also saw its guidelines for conducting the same and for methods like brainstorming; we saw some of its important considerations.

7.10 QUESTIONS

1. What is dramatization? State its importance in education.
2. Write a note on brainstorming.
3. What are workshops? As an example, discuss a workshop & write its guidelines.

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8

METHODS OF LEARNING AND TEACHING SELF LEARNING - SELF-STUDY

Unit Structure

8.0 OBJECTIVES

After reading this unit, you will be able to:

- Explain the meaning of self learning
- Explain the meaning of self-study
- Illuminate the importance of self-study
- Suggest measures for effective self-study
- Explain the meaning of SQ4R method of self-study
- Discuss the steps involved in SQ4R method of self-study
- State the importance of SQ4R method of self-study
- List out the drawbacks of S04R method of self-study
- Explain the meaning of Supervised method of self-study
- Discuss the steps involved in Supervised method of self-study

- Suggest measures for effective Supervised study
- State the importance of Supervised method of self-study
- List out the drawbacks of Supervised method of self-study

8.1 INTRODUCTION

Methods of teaching and learning are procedures of teaching and learning different subjects in the school curriculum. The procedure will depend upon the nature and significance of subject matter to be taught to the students. Sometimes the terms methods and techniques are used synonymously in various discussions on teaching procedure. There is a subtle difference between the two. A method answers the question. 'How? Whereas a technique is something that we put into practice. Method is a way or manner of doing something. It is a systematic arrangement of ideas and making plans in order to get something done effectively.

8.2 SELF LEARNING

Self-Learning means independent work to be carried out by the students, In Self Learning, the individual's studies and learns by himself. He attempts and solves every problem himself / herself. So Self Learning is a habit of independent learning so that the students are able to solve problems, acquire knowledge and skills required with their own independent efforts.

Check Your Progress
1. What is self-learning?

8.3 SELF-STUDY

According to Rousseau, "It is not your business to teach the child the various sciences, but to give him a taste for them, and method of learning them, then this taste is more mature. This is assuredly the fundamental principal of all good education."

Learning to learn is not a new idea. More than 200 years ago, Rousseau aimed at developing attitudes to and methods of learning quite apart from formal teaching and prior to the acquisition of knowledge.

Today's learning theorists believe that learning to learn and the experience of learning can go hand in hand. Large numbers of students who are ineffective and unsuccessful learners go to prove that students, earlier in their learning career need to develop efficient ways of learning. Learning is a skill which can be perfected with practice the car driving or playing cricket.

8.4 IMPORTANCE OF SELF-STUDY

- It prepares the students for real life where he cannot depend on others.
- By self-study the students learn to make use of their knowledge in tackling various problems.
- Self-study is the best way to supplement class teaching. Self-study is the best way to practice various things.
- Self-study develops problem solving and heuristic attitude in the students. It also develops initiative and independent thinking in the students.

It helps in widening the mental horizon of the students.
- It discourages cramming.
- It builds up self-confidence in the students and they do not hesitate in tackling problems.
- It helps in proper utilization of leisure time.
- It helps in developing the interest of the students in learning of different subjects

Check Your Progress
1. How is self-study important for students?

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8.5 SUGGESTIONS FOR SELF-STUDY

To encourage self-study the following points are useful:

1) An effort be made to convince the students about the fact that a subject is best learnt through self-effort.

2) An all out effort be made to inculcate the habit of self-study in the students at the earliest possible stage.

3) The teacher should adopt heuristic method of teaching in the classroom. He should encourage independent work on the part of the students.

4) Teacher should properly grade the work that he wished to accomplish through self-study.

5) Teacher should encourage the students to make proper and full use of library books. For this he may suggest them certain interesting readings.

6) The students be also trained to take notes in independent self-study.

7) The teacher should ask the students to read a topic in advance, before taking it up in the Class.

8) The students who study independently should be praised publicly.

9) The co-operation of parents should be sought to ensure progress of a student in self-study.

10) The work accomplished by the student in self-study should be checked, corrected and evaluated by the teacher. The teacher must cultivate this habit in himself. As and when n in the students possible, he must cultivate this habit in the students.

Check your progress
1. What can the teacher, do for inculcating the habit of self-study in her student?

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8.6 METHODS OF SELF-STUDY

Let us see the various methods which the students can employ for self-study. The two methods of self-study described here are
• Self-study SQ4R
• Supervised study

8.6.1 Meaning of SQ4R
Cognitive psychologists have developed amazing techniques to help facilitate memory and recall. Our education system is very recall oriented and memory plays a vital role. Recall is largely influenced by the way we learn. One very effective method is S04R method.

'SQ4R'- Each letter of 'SQ4R' stands for an important step in the technique

The six steps are:
- (S) - Survey
- (0) - Questions
- (R-1) - Read
- (R-2) - Reflect
- (R-3) - Recite and Recall
- (R-4) - Review

Thomas and Robinson (1972) developed the strategy for effective learning and memorization.

8.6.2 Importance of SQ4R
- The students acquire the habit of learning on their own
- Students are often confronted with huge volumes of studies which they find difficult to retain and reproduce at the time of examination
- It becomes a pleasurable experience.
- It makes the child a responsible person.
- The whole vista of knowledge is at his disposal

8.6.3 Steps of SQ4R
In this technique, the learners are taught to adopt a systematic approach to learning the desired material involving sequenced steps i.e survey, question, read, reflect, recite and recall, review. These steps are named and remembered through the letters SQ4R

1) Survey: Initially, the material to be remembered is surveyed quickly to get an idea of what is going to be remembered.

2) Question: In this step the learner asks himself questions like why, what, when, where, and who, concerning the material surveyed in the first step.

3) Read: The material is then read for mental comprehension and to learn the answers to the questions raised in the second step.

4) Reflect: The information given in the material is organized and made meaningful by a) linking it with the previous knowledge, b) Comparing and contrasting the facts, c) Correlating the information with other similar facts, concepts and principles, and d) attempting to make use of the material in solving simulated problems.

5) Recite and recall: The information provided in the material is remembered through recitation and recall both orally and in writing.

6) Review: In this final step, the material needed to be remembered is actively reviewed. The learner asks himself questions related to the information given in the material and in case he is able to provide satisfactory answers, he reads the material again, recites and remembers it more carefully and then again evaluates his learning or remembering performance.

8.6.4 Drawbacks of SQ4R

- At times students may not be motivated to study on their own.
- All the topics cannot be left to be studied by SQ4R method
- Students may have difficulty in understanding certain concepts

8.6.5 Meaning of Supervised study

By supervised study we mean to study under the supervision of the teacher. The students are asked to solve problems or to do some practical work in the school hours or even in the afternoon if it is a residential school. The students are free to work independently or to perform activities in consultations with their teacher. It is the responsibility of the teacher to see that the students make efforts in the right direction.

8.6.6 Importance of Supervised study

Supervised study has been found to be helpful in a number of ways

1) It creates a suitable atmosphere for the self-study of the students.

2) It helps in providing on the spot help and guidance to the students.

3) It provides enough scope for mutual consultation amongst students as also amongst student and teacher whenever the need arises.

4) It helps the teacher in knowing about the doubts and difficulties of individual pupils. Such a knowledge is useful for teacher and he is then in a better position to understand and guide the students.

5) The presence of the teacher makes the atmosphere of learning more congenial and the students have to complete the work given to them.

6) It is helpful in development of the habit of regularity, punctuality and systematic work.

7) It helps to save time as also energy of students as they are guided in the right direction

8) It helps in solving the problem of indiscipline because the students are kept busy in one or the other thing.

Check Your Progress

1. What is supervised study?

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2. Describe the procedure of self-study?

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3. How is SQ4R an important method of self-study?

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4. Enumerate the drawbacks of Self-study SQ4R method.

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5. Give the significance of supervised study method.

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8.6.7 Drawbacks of Supervised Study

1) It overburdens the teacher because he has to plan, supervise and guide pupils individually. Thus it demands too much work from the teacher.

2) In supervised study the teacher is required to supervise and guide pupils individually. Such a supervision may not be possible in larger classes

3) The teacher may be tempted to provide too much guidance, which amounts to interference in the free work of pupils. Guidance should be neither too much nor too little.

4) The supervision may become purposeless, when it is done by the teacher merely to keep the students busy or to penalize them.

5) The teacher should not be very strict, otherwise the students will be afraid to consult him.

Supervised study is a useful technique and it trains the students to work independently. They need guidance, the need of the teacher is desirable. As the students learn to work themselves, the amount of guidance should be decreased. The success of the technique depends upon teacher's devotion and hard work. The teacher should remember the goal of supervised study, the ultimate goal is self-learning,

Check Your Progress
1. Enumerate the drawbacks of supervised study method.

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8.7 LET US SUM UP

In this unit we have
- Defined self-study
- Discussed the importance of self-study
- Suggestions for employing self-study
- Touched upon methods of self-study
- Discussed the meaning, procedure, importance and drawbacks of SQ4R
- Discussed the meaning, procedure, importance and drawbacks of supervised study.

8.8 QUESTIONS

1. Discuss the meaning & importance of supervised study.
2. What is self-study? State its importance.
3. Differentiate between supervised & self-study.

8.9 REFERENCES

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9

METHODS OF LEARNING AND TEACHING SELF LEARNING - PROGRAMMED LEARNING

Unit Structure

9.0 OBJECTIVES

After reading this unit, you will be able to:

- Explain the meaning of Programmed Learning
- State the characteristics of Programmed Learning
- Differentiate between traditional approach and Programmed Learning
- State the principles of Programmed Learning

- Describe the advantages and applications of Programmed Learning
- List the types of Programmed Learning
- Explain the meaning of Linear programme
- Describe the features of Linear programme
- State the limitations of Linear programme
- Explain the meaning of Branching programme
- Describe the features of Branching programme
- State the limitations of Branching programme
- Differentiate between linear and branching programme

9.1 INTRODUCTION

Programmed Learning is one of the important innovations of the 20th century in the teaching learning process. It is a self learning technique for providing individualized learning experience to the learner.

Some educators regard Socrates as the earliest programmers. Some believe that 'Gita' is first programmed text as it has all ingredients of programming It has all the ingredients of programming: initial behaviour, small steps, active participation, terminal behaviour, immediate knowledge and self-evaluation by the learner. In essence programmed learning is a new method based on the old Socratic principle of individual tutoring.

Several countries notably the Republic of Korea, Philippines, Singapore, India, Pakistan and Sri Lanka have been experimenting with programmed learning both for individualized learning and also as a technique for mass education.

Indonesia has taken up the innovation of programmed learning. Indonesia, confronted with the massive problem of upgrading its traditional educational system to cope with modern needs selected individualized learning through modular learning as the most effective teaching learning strategy to achieve its objectives

The basic idea of programmed learning is that the most efficient, pleasant and permanent learning takes place when the student proceeds through a course by a large number of small, easy steps

9.2 MEANING OF PROGRAMMED LEARNING

Programmed Learning is also called as programmed instruction.

Definition of Programmed Learning

Smith and Moore: "Programmed Learning is the process of arranging the material to be learned into a series of sequential steps, usually it moves the student from a familiar background into a complex and a new set of concepts, principles and understanding."

Susan Markle: "it is a method of designing a reproducible sequence of instructional events to produce a measurable and consistent effect on the behaviour of each and every acceptable student."

Michael Apter: "Programmed Instruction is a method of instruction in which the information to be taught is broken into small units which are to be presented to the students (usually in written form) in a carefully planned sequence. Each unit or 'frame' contains not only information but is also terminated with a question."

Thus, Programmed Learning as popularly understood 'is a method of giving individualized instruction in which the student is active and proceeds at his own pace and is provided with immediate knowledge of result. The teacher is not physically present.

Check Your Progress

1. State the meaning of Programmed learning.

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9.3 CHARACTERISTICS OF PROGRAMMED LEARNING

1) It is a process of constructing sequences of instructional material in a way that the rate of learning is maximized, the understanding is fostered and the motivation of the student is enhanced.

2) Assumptions about the learner are clearly stated and put in definite terms in a programmed learning type of situation. These assumptions may relate to the particular level of reading competence of the learner, his command of vocabulary and his background in the subject matter.

3) The objectives underlying the programme are defined in explicit and operational terms. This makes the terminal behaviour desired to be built up through the programme measurable and observable.

4) The subject matter is broken up into small steps in a logical sequence. The small steps stress the gradual nature of the increase in complexity and the smoothness of the transition from one item to the next. Information grows in depth. Changes occur in quality and quantity.

5) Programmed Learning emphasises the interaction between the learner and the programme.

6) The learner is made to respond actively by asking to fill in the blank, count the number of coins in a row or complete a series of numbers. For doing it correctly the student receives reinforcement and establishes a pattern of stimulus response interaction.

7) A programmed learning sequence takes into account the initial behaviour of the learner with which it starts and the terminal subject matter competence which the learner is to achieve.

8) Programmed Learning system has an adequate provision for immediate feedback which is based on the theory of reinforcement. For instance, while responding to the first frame of the programmed material the learner is informed about the correctness of his response. In case he 'is correct, his response is reinforced and if he is wrong, he may correct himself by receiving the correct answer.

9) The learner progresses at his own pace,

10) It takes care of the fact that there are even differences in the rate at which an individual learner learns various kinds of subject matter.

11) It enhances the capability of the learner to discriminate or to generalize by frequent application and thus offers the learner an interesting and challenging prospect

12) It has the provision for continuous evaluation which may help in

improving the student's performance and the quality of programmed material.

13) It is based strictly on the behaviouristic principles of psychology. A fair amount of stress is given to the explanation

and development of understanding through the handling of various cues in the learning process.

14) A learner moves in a very specific way as opposed to the traditional procedures of teaching where the learner moves in a general way.

Check Your Progress

1. State the characteristics of Programmed Learning.

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9.4 DIFFERENCE BETWEENTRADITIONAL APPROACH AND PROGRAMMED LEARNING

Sr. No.	Traditional method	Programmed Learning
1	It becomes difficult to apply teaching principles in crowded classrooms	It is new based on the teaching principles that have been known for years
2	It is a group technique	It is an individualized technique of Learning
3	It presents the matter as a whole	It presents the matter step by step in logical order
4	The learner does not get immediate feedback	Immediate feedback is given to the learner
5	Objectives are not well-defined and are usually vague	Objectives are defined very clearly in operational terms
6	Little preparation is made	The programmer prepares his programme with care and precision
7	The student usually remains passive listener and the teacher himself does the summarizing and reviewing	programme is prepared in such a way that the student automatically participates actively by making responses quickly

8	A unit is a lengthy one. There is no provision for response from the students in the form of answers to questions	The size of the unit of information presented to the student is a small bit of information
9	It is usually found to be very difficult to modify traditional learning on the basis of student reaction	A programme is developed empirically through a series of tryouts and refined gradually. Effective sequences of frames are retained and ineffective ones are discarded

Check Your Progress

1. Differentiate between Traditional learning and Programmed Learning.

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9.5 PRINCIPLES OF PROGRAMMED LEARNING

The studies and researches in the field of programmed learning have led to the establishment of some fundamental principles associated with a good programmed learning strategy. The five basic principles of programming are as follows.

1) Principle of small steps: This principle rests on the assumption that one learns better by being active. Therefore, according to this principle, the subject matter to be programmed is analysed thoroughly and broken into meaningful segments of information. One segment of information is presented at a time to the learner. This piece of information is called a 'frame'.

2) Principle of active responding: This principle rests on the assumption that a learner learns better by being active. Therefore, programming provides active responding on part of the learner. It does not only present the material to the learner but it induces sustained activity. The learner remains busy and active when he works on a programme. A good programme requires thorough understanding of the previous frames before moving on to the next frames and thus acquiring knowledge step by step in a properly sequenced manner. Active responding on part of the learner means involvement in the

learning process. It does not mean a small response to a small bit of information.

3) Principle of immediate feedback: The psychological phenomenon of reinforcement i.e. one learns better when one is motivated to learn by receiving information of the result just immediately after responding is the basis of this principle. When a learner proceeds through a linear programme, he is provided with the knowledge of results immediately after writing his response of the frame. He can compare his response with the correct response of the programmer. If the learner is correct, his response is confirmed. And in case he is wrong, he has at least read, the correct response which raises the probability that he will give correct response. It is a truism that learning which is accompanied by success and satisfaction is likely to be permanent. Necessity of providing immediate confirmation is important from two points: first 'in any systematically developed programme, the learner will not wildly guess and secondly when the learner is unsure of his response, he needs it confirmed or corrected and whenever he is wrong but thought he was right.

4) Principle of self-pacing: Programmed Learning is based on principle of self-pacing. It is based on the basic assumption that learning can take place better if an individual is allowed to learn at his own pace. Therefore, in programmed instruction the learner proceeds at his own pace when he works through a programme and is not forced to move with other members of the class. Programming, by providing self-pacing has incorporated the principle of individual differences in the teaching learning process.

5) Principle of student testing: For better learning it is always better to seek continuous evaluation of the learning process. The present principle meets this requirement. In programmed instruction the aim of this arrangement is for the teacher to regularly assess the weakness of his programme and can modify the weak portion of his programme. The student can also evaluate his performance on the programme.

Check Your Progress
Illuminate the principles of Programmed learning

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9.6 ADVANTAGES AND APPLICATIONS OF PRO GRAMMED LEARNING

Programmed learning may be prove quite useful to the students, teachers and educational administrators from various angles. These advantages and applications are summarized below:

1) Programmed learning may help in individualizing the instructional process. The scope of self-pacing gives opportunity to the students for learning with their own speed without obstructing the path of others.

2) Programmed learning provides feeding material to the self-instructional devices like computer, teaching machine programmed text. The use of such devices
   i)   Helps the students in the task of self-learning.
   ii) Solves the problem of paying individual attention.
   iii) Solves the problem of trained and efficient teachers.
   iv) Helps in revolutionizing, developing and providing techniques of mass education and self-education.

3) Through programmed learning the teacher may be freed from the hard labour and complexities of routine classroom activities. It may help them to bear a larger load of the students and devote their time to more creative activities.

4) The social setting of the classroom may be properly improved and problem of discipline gets solved automatically with the help of programmed learning.

5) It proves an effective teaching strategy on account of the following:
   i)   Content may be thoroughly analysed and presented in suitable steps and logical sequence.
   ii) Instructional objectives are properly set.
   iii) Reinforcement and feedback are properly provided
   iv) The learner gets opportunity for self-learning and initiating his response.
   v)   Learner is actively involved in the task of learning. He is provided with sufficient motivation, sustained attention and interest.

6) Programmed learning may prove useful in the enrichment of curriculum and in this way, it may prove helpful in the education of exceptional children.

7) Programmed learning may be effectively used in providing guidance and remedial instruction.

8) Programmed learning helps in the development of integrative judgment and creative learning. The power of discrimination and making immediate and effective responses is developed through such learning.

9) There are various special areas of the curriculum and many complex behaviours and skills that can be effectively improved and mastered through programmed learning technique. For e.g. drill and practice work in Mathematics, concept formation and learning of principles and similar other intellectual and motor skills can be effectively learned through programmed learning.

In this way Programmed learning may prove a big helping hand in all the tasks and aspects of education.

Check Your Progress
1) Discuss the advantages and applications of programmed learning

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9.7 TYPES OF PROGRAMMED LEARNING

In Programmed learning the presentation of the instructional material or subject matter to the learner in a suitable form is termed as programming. Various types of programming have emerged on account of researches and experimental studies in the field of Programmed learning. Some of mentionable are listed below:

- Linear or Extrinsic Programme
- Branching or Intrinsic programme Mathematics programme
- Regular system of programme
- Computer assisted instruction
- Learner controlled instruction

Check Your Progress
1. List the different types of programmes

_____

_____

_____

_____

9.7.1 Meaning of Linear programme

A self-learning programme is prepared frame by frame. The frames are numbered. It is the arrangement and control of sequence of frames which constitute a linear programme or branching programme.

Linear programme:

Linear programme was developed by B. F Skinner of Harvard University. It has been defined by psychologists as " A programmed material sequence in which each student proceeds in a straight line through a fixed set of items." This type of programme is called Skinnerian type of programme because for the first time he used this type of sequence to shape the behaviour of animals and prepared ground for human learning.

Skinner after extensive experimentation on rats and pigeons established that animals or human beings can be led to desired goal by presenting carefully structured material in small steps provided each step is reinforced or rewarded by favourable experience. The reinforcement increases the probability of the same response to recur again in future as food pellet for a rat each time the buzzer sounds. The rat can be taught to go to the food hopper when the buzzer sounds. Any type of complex behaviour can be taught through a stimulus -response chain.
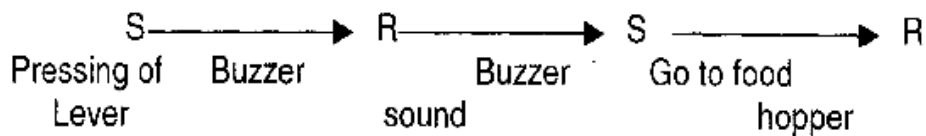
S———→ R———→ S ———→ R

Pressing of   Buzzer   Buzzer   Go to food
Lever   sound   hopper

Fig. 9.1 Linear Program example

Pigeons can be taught to dance in intricate manner and rats can be taught to run in intricate mazes without error. In case of human beings, the learner starts from his initial behaviour to the terminal behaviour following a straight line. The student proceeds from one frame to the next until he completes all the steps and each step is presented in proper sequence. The responses of the student are immediately reinforced in the succeeding frames. In each frame a small amount of information will be presented; the student will be required to make an active response-, positive reinforcement or feedback is given and prompts or cues are provided that enhance the probability of correct responses and eliminate or greatly diminish errors. The format of linear programme is as follows:

I. Stimuli
   a. bit of information
   b. question based on the information
   Frame No. 1
2. Response
   Space for response - a blank in a sentence or after question
3. Cues
   (May be present or absent)
1. Correct answer to frame no. 1
2. Information
   Frame No. 2
3. Stimulus
4. Response
5. Cues
1. Correct answer to frame no-2
2. Information
   Frame No. 3
3. Stimulus
4. Response
5. Cues
   Example of a linear programme

Frame 1.

　　　When a man pulls an object, he is said to be working. Work is therefore accomplished when an ------------------------ is moved.

Response: object

Frame 2.

　　　When an object is hard to move, it is said to offer resistance. A heavy object will offer more ----------------------- than a light object.


Response: resistance

Frame 3.

This --------------------------- to movement is called as opposing force

---

Response: resistance

Frame 4.

A heavy object will offer more ------------------------ force than a light object

9.7.2 Features of Linear programme

1) Linear means proceeding in a straight line. In linear programme generally, information is broken into small steps of 40-50 words in length which is called a frame. The learner must respond to each frame in succession by filling in word or phrase in a blank.

2) Linear Arrangement. In such type of programme, the learner advances in a single series of shorts steps which are designed to ensure high rate of correct responding to the questions (frames). Same path is followed by each learner. The learner starts from initial behaviour to the terminal behaviour following straight-line sequence. All learners pass through the same path.
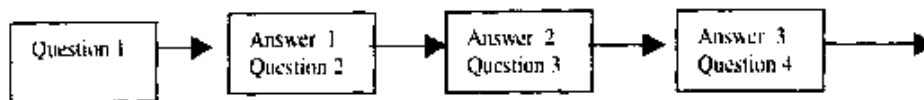
3) Responses are controlled, In a linear programme, responses are controlled by the programmer. The responses and their order are fixed. The learner has no choice to respond in his own way.

4) Response is emphasized. In linear programme, the emphasis is laid on response. The learner must respond to each and every frame for learning to occur.

5) Feedback is quick. As soon as the learner responds to the frame, he can immediately compare his response with the response of the programme.

6) Provision for prompt. In the beginning, prompt or cue can be supplied to facilitate learning to occur.

7) Cheating is discouraged by not revealing the answer to the learner.

8) Learner can skip certain frames.

9) Responses are self-constructed.

9.7.3 Limitations of Linear programme

1) It is alleged that learning becomes dull and learner experiences monotony and boredom. It takes too much time to teach a few points.

2) Freedom of choice is curtailed. The learner has no choice of his own to respond, thus it is alleged that creative imagination of learner is inhibited.

3) It has been found that preparation of programmed material requires too much paper and time.

4) Rothkopf is of the opinion that in many programmes, the learners find out the cues as to what is to be filled in blanks and key terms are guessed

5) It can be used in limited areas where the behaviour is measurable and observable such as maths and science.

6) S.L Pressey and his associates have questioned the value of linear programming format on the following grounds.

   a) The frames are presented in serial order.

   b) Searching of material is not permitted as in a textbook. Judgmental learning is not practiced.

   c) Linear programming does not permit differentiation among responses.

7) Students do not contribute for discovery of answers except to follow a rigid line prescribed by the programmers.

8) Programmes are generally designed with a view that learner has no previous background of the subject matter. It 'is very difficult to find out exactly the background of each learner.

9) In case of book form presentation, learners are expected to be honest but from all learners we cannot expect honesty. They can see the correct response without reading the frames.

9.7.4 When to use Linear programme?

Linear programming is based on the assumption that we can carefully analyze the steps in learning and present them in the right sequence at the right time with appropriate reinforcement. Emphasis is placed on the correct response of the student and cent percent achievement is assumed. If the child does not learn, any one of the steps is wrong. Linear programme may be used when all the children have the same entry behaviour or have no previous knowledge of the subject

9.7.5 Meaning of Branching programme

The branching or intrinsic programme was originated by Norman Crowder. He has given its definition as " It is a programme which adapts to the needs of the students without the medium of extrinsic device as a computer." It is called intrinsic because the learner within himself makes the decision, to adapt the learning to his needs.

The rationale of intrinsic programming postulates that the basic learning takes place during the student's exposure to the new material on each page.

In branching programme, the learning material is divided into 'units' of material called 'frames'. Much information, one or two paragraphs or even a page, is provided in a frame. Thus each frame is quite larger than that employed in linear programme.

The learner goes through the frame. After that he is required to respond to multiple choice questions associated with the learning material of the frame.

The learner moves forward if he answers correctly but is diverted (branched) to one or more remedial frames if he does not. These frames explain the matter afresh, ask him questions to elicit the right answer and reveal his previous mistakes, and then return him to original frame. This cycle goes on till the learner passes through the whole instructional material at his own pace.

Schematic representation of a branching programme Content frame
a) Repeating student response
b) Positive confirmation
c) New information'
d) Question
e) Alternatives followed by page numbers, where the student should go next.

Remedial frame
a) Repeating student response
Example of a branching programme

Degrees of Comparison

A positive degree is used to compare two equal things or persons

A comparative degree is used to compare two unequal things or persons.

A superlative degree is used to compare more than two unequal things or persons

India is the ----------------------- democracy in the world.

a) large   Go to page 2
b) large   Go to page 3
c) largest   Go to page 4

Page 2

You are wrong.

You have used the positive degree of comparison used to compare two equal things or persons. You have to use to use the superlative degree to compare more than two unequal things

---

Page 3

You are wrong.

You have used the comparative degree of comparison used to compare two unequal things or persons. You have to use to use the superlative degree to compare more than two unequal things

---

Page 4

Sheela is as ----------------------- as Ram

a) Tall   Go to page 6

b) Taller   Go to page 7

c) Tallest   Go to page 8

9.7.6 Features of Branching programme

1) Material in a frame is larger; much information is presented at each step. A step may consist of two or more paragraphs and sometimes a full page.

2) The method of student response is different than that of linear model, student has to make choice out of several choices. Multiple-choice questions are asked. Each response to the question is keyed to different pages, If the learner selects correct response, his response is confirmed and in case he selects wrong response, then he is routed to material which explains as to why he is wrong.

3) Crowder holds that teaching is communication and so he concentrates his attention upon the improvement of communication.

4) Learner has freedom to choose his own path of action according to the background of subject matter. The learner controls the exact sequence that he will follow.

5) The programmer has ample opportunity to exploit the literary style.

6) Student are more alert and concentrate on the subject matter more carefully.

7) Detection and concentration of errors is important. Crowder holds that making error is basic to learning. He permits 20 percent errors in his model. In such a model first the errors are detected and then corrected. The learner knows why he is wrong. Crowder says that it is impractical to eliminate errors in the process of learning

8) The crucial and identifying feature of branching model is the fact that the material presented to each student is continuously and directly controlled by the learner's performance in answering questions.

9) Intrinsic programmed material when presented in a book form, the book is called scrambled book because the pages do not follow in a normal sequence.

10) It is very useful to concept learning or where the material is given in larger steps.

11) The role of active response is not central in intrinsic theory. Intrinsic programme offers less guidance to learner as to what material in the frame is important.

9.7.7 Limitations of Branching programme.

1) The learner may guess the correct response without understanding the subject matter of the frame.

2) Infinite branching cannot be provided. It cannot cater to the needs of the individuals. It is very difficult to find out the total number of branches for each individual.

3) Cost of preparation is high, audio-visual equipment is costly.

4) The programme needs revision after every two years which is a very costly affair.

5) Programs are the product of programmer's imagination and it is he who decides diagnostic questions and level of content.

6) Branching model can be used after VI the grade because small children do not follow its mechanism.

7) It is very difficult to ask questions on the whole matter of the frames because the frames are too large and sometimes important subject matter is left.

9.7.8 When to use branching programme?
When a programmer knows that the learner's entering behaviour differ from each other

9.7.9 Comparison between Linear programme and Branching programme.

Sr. No.	Unit of presentation	Linear	Branching
1	Step size	Small	Larger
2	No. of Steps	Large	Small
3	Error-rate	5%	20%
4	Response	Constructed response	Multiple Choice
5	Reinforcement	Correctness of response	Correctness of No remedial frame response remedial frame provided
6	Subject matter suitability	Factual information	Broader concept

7	Paper programme	Normal text	Scrambled text
8	Cost of paper	Cheap	More expensive
9	Control of response	Controlled by the programmer	Path of action is controlled by learner
10	Teaching machine	Simple, less cost	Complicated, high cost
11	Utility	Lower class Knowledge & understanding Higher objectives Normal & less intelligent	Higher classes Talented and creative

Conclusion

Programmed instruction is a self -instructional material developed on the psychological principles of teaching and learning process. A rapid learner can cover the material quickly and a slow learner may proceed at his own pace. This frees the learners from the same type of teaching materials delivered to the whole class at the same pace. The programmed learning material helps the learner to teach himself at any place and pace according to his convenience. Different types of programmes have their special advantages and facilitates, learner's initiative participation and involvement according to their interests and ability. They provide scientific teaching and learning for efficient and effective acquisition of knowledge and skills. The analytical thinking and self-direction of learners is also promoted through the use of programmed learning materials.

9.8 LET US SUM UP

In this unit we have
- Defined programmed learning
- Discussed the differences between traditional approach and programmed learning
- Discussed the principles, types and advantages and applications of programmed learning
- Discussed the meaning, features and limitations of linear programme
- Discussed the meaning, features and limitations of branching programme

9.9 QUESTIONS

1. State and explain the Principles of Linear Programming
2. Discuss the differences between traditional approach & programmed Learning approach.
3. What are the features of branching programming.

9.10 REFERENCES

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10

EDUCATION THROUGH COMPUTERS

Unit Structure

10.0   Objectives
10.1   Introduction
10.2   Need and origin of Computer Assisted Learning
10.3   Meaning of Computer Assisted Learning
10.4   Modes of Computer Assisted Learning
10.5   Advantages of Computer Assisted Learning
10.6   Limitations and Drawbacks of Computer Assisted Learning
10.7   Summary
10.8   Questions
10.9   References

10.0 OBJECTIVES

After reading this unit, you will be able to:

*   State the need of Computer Assisted Learning
*   Explain the origin of Computer Assisted Learning
*   Explain the meaning of Computer Assisted Learning
*   Describe the modes of Computer Assisted Learning
*   Illuminate the advantages of Computer Assisted learning.
*   State the limitations and drawbacks of Computer assisted Learning

10.1 INTRODUCTION

Computer is one of the finest and most important gift of the science and technology to mankind. It has done miracles in almost all walks of life. Today there is no aspect of our life which has remain untouched with the use and application of computers. In the field of education too, these are being used for managing its affairs including teaching. With the introduction of New Education Policy 1986, our country also has taken initiative for making their use in the teaching learning activities. Instructional work so carried out with the help of computers is generally know as Computer assisted Learning or computer assisted instruction.

There is another method of Learning with computers, called Computer Assisted Learning (CAI). In the CAI mode, the computer acts as a manager. It directs a learner to learn from different sources once the objectives have been formulated. The computer asks the learner to identify the objectives. Then, it organizes itself to do the management as follows:

It advises the student to study from page n to page m from a book. On completion, it gives test questions to the students and evaluates the learning. Then it advises the student to go to a laboratory and conduct experiment. On completion of experiment, it provides further instruction etc.

10.2 NEED AND ORIGIN OF COMPUTER ASSISTED LEARNING

Theoretically it may sound well but how can it be practically possible for a teacher to respond to varying questions and demands of the different types of learners all needing immediate attention and assistance at a time for carrying out their own learning activities. How much knowledge, skill, ability, concentration, energy and stamina the teacher must have for meeting these requirements was the basic problem for the educationists for carrying out instruction on a true individual base. There was a need of such a learning process helped by the men and machine which could meet the following conditions for an ideal individualized self-learning.

- Learner must be free to get learning at his own free will.

- The sequencing of learning experiences must be in tune with experiences and ability of the individual learner.

- There must be a variety of programmes or learning sequences available for meeting the requirements of each and every learner.

- The learner irrespective of their number must be able to interact with the resource media on the pattern of tutorial system.

- The search about the fulfilment of the above laid conditions made the educationists work for the replacement of teaching machines with some other sophisticated media.

- In its beginning CAI was limited to universities. The first mentionable attempt in this direction was made in 1959 by university of Illinois where Prof. Donald Bitzer of this university conceived a project entitled Plato (Programme Logic for Automated teaching Operations) for the CAI. Since 1959, PLATO has gone through four versions.

10.3 MEANING OF COMPUTER ASSISTED LEARNING

Computer assisted Learning as the name suggests stands for the type of learning aided or carried out with the help of computer as a machine. It is just one step ahead to the use of teaching machine and probably two, to the use of programmed textbooks, The computer is said to be ahead of the teaching machine on account of its unlimited capacity of doing more work and multiple type of works at the same time for unlimited number of individual learners.

Definition Of CAI: "CAI is defined as an interaction between a student, a computer-controlled display and a response entry device for the purpose of achieving educational outcomes".

This definition brings out the following things:

- In CAI there is an interaction between an individual student and the computer just as happens in tutorial system between the teacher and an individual student.

- Computer is able to display the instructional material to the individual student.

- The individual student takes benefit of the displayed material and responds to it. These responses are attended by the computer for deciding the future course of learning displayed to the learner.

- The interaction between the individual learner and the computer device helps in the realization of the set instructional objectives.

Thus, CAI can be defined as a method of learning in which there is a purposeful interaction between a learner and computer device for helping the individual learner to achieve the desired instructional objectives with his own pace and abilities at his command.

10.4 MODES OF COMPUTER ASSISTED LEARNING

Computers are being increasingly employed for classroom learning as also for individualized and distance education. Computer assisted learning is known as computer Aided Learning in U.K. Either of these refers to on-line direct interactive learning experience through the computer. It can be done in one of the many modes of learning, some of which are:

1) Information Mode: This type of CAI helps the learner to get the desired information needed by him. Here computer can serve the role of an equity office, to respond to student's enquiry with answers it has stored. It provides minimal interaction between

the student and the computer programme. The sole purpose of this type of CAI is to provide essential information for the acquisition of concepts and skills. However an individual learner can learn a lot by adopting an enquiry or discovery approach towards self-learning through such learning.

2) Tutorial mode: In such type of CAI the computer is involved in actual teaching. The tutorial programmes are prepared not only to provide instructions in topics like Newton's law of motion, sets and their operations, having proper track of the student's difficulties and performance and move the students on the path of progress according to their own pace, abilities and requirements. In case the student is able to master a concept, the CAI programme provides next step of instruction, but if he is not able to achieve mastery, the programme provides remedial instruction.

3) Drill and Practice mode: The learner is provided with a number of graded examples on the concepts and principles learnt earlier. The idea is to develop proficiency and fluency through doing. All the correct responses are reinforced and the incorrect responses are diagnosed and corrected. The computer continues the drill until mastery is achieved by the learner. For e.g. for providing practice in multiplication skill the computer may display on the screen the following simple problem.

$7 * 8 = $ ....

The child is required to respond by typing the numeric keys of the keyboard. If the answer is wrong the computer immediately displays incorrect and if the answer is correct, another problem for carrying out practice is presented.

4) Problem solving mode: Such type of CAI focuses on the process of finding an answer to a problem rather than the answer itself. Here the students are provided with programmes that can make them think about the ways and means of solving the problem systematically. With the concrete ways suggested in the programmes, here students can divide or analyze the problem into its small constituents and are able to devise systematic procedure for its solution.

5) Practical work mode: Computer instructional programmes can provide valuable help in supplementing laboratory and other practical work. A student can learn so many things about science experiments before actually performing them in his practical class by watching and following a computer programme made for this purpose. Similarly, he can avail necessary skills and experiences about practical tasks in other

fields before actually engaging in such practical activities. Thus, the children have a necessary pre-preparation and background from computers for their better performance at the school hours.

6) Simulation mode: The learner is presented with scaled -down simulated situations bearing correspondence with the real situations. Simulations are made to avoid risk, save money and conserve time. Simulation of an aeroplane in flight, an experiment on titration, a nuclear reaction, collision of two bodies, etc. are good examples of simulation mode.

7) Gaming mode: The learner is engaged in playing opposite the computer or opposite another learner. The extent of learning depends upon the type of game. Games on spelling, names of places and general knowledge are some examples of the gaming mode.

10.5 ADVANTAGES OF COMPUTER ASSISTED LEARNING

Computer Assisted learning offers following advantages over other systems of learning

- Each student receives instructions at his own pace.

- Each student responds continuously as he receives instructions.

- Each student receives feedback for his response.

- All units of learning are broken into subunits and small elements of learning in accordance with Skinner's approach of teaching in small steps.

- Reinforcement of learning 'is received by personal messages. i.e 'Yes, Ravi, that is right.

- Learning sessions are kept manageable by designing the duration between half an hour to one hour.

- Lessons from theories of learning are taken into account at the stage of instructional design. For eg Skinner's operant conditioning is implemented.

- Students can access the computers at any place.eg in their hostel rooms, in the tutorial rooms, or at another place in the country...

- Students can learn in their own styles and ways. i.e through examples, through case studies or through problems.

- Students can test their own learning at any time of progress. End of unit learning may also be timed at one's convenience,

- Teacher - time is saved from the routine information giving activity and is employed in innovative instructional design and student guidance. Etc.

- Advantages of different modes of learning are accrued by employing them appropriately, wherever desirable i.e. lesson presentation, tutorial, exercise, simulation.

10.6 LIMITATIONS AND DRAWBACKS OF COMPUTER ASSISTED LEARNING

- The use of CAI in classroom proves quite expensive and uneconomical in terms of educational returns.

- Much of the difficulty is felt on account of the unavailability or usability of educational soft wares. Either we don't get any programme for a particular type of learning and teaching of a topic or are cheated by the computer firms by selling us soft wares found virtually useless and unusable

- Servicing of the hardware also poses a serious problem. If for one or the other reason the machine fails, the expertise to operate it again or do repair work is not easily available. Consequently, the regular instructional work of the students may receive a major setback.

- The auto instruction carried out in the form of CAI is basically a learner's controlled instruction. Hence the learner is the master of the whole instructional process and thus there is little scope for keeping restraint and checks on the learners. IT may lead to indiscipline, truancy, carelessness and unnecessary wasting of time on part of students.

- The learners are supposed to type from the keyboard or use light pens against the T.V screen for putting up their responses. During long study hours this exercise may prove quite boring, mechanical, and tiresome to the students. However, they have to live up with it as a way to interact with, the computer on account of the fact that there is no computer up till now that can communicate and respond to the speech and writing of the students like their teachers.

- CAI, however good it is cannot be accommodated properly 'in the present set up of our schools or colleges comprising set timetable schedules, uniform curricula and group oriented instruction examination system, etc.

- The other major limitation of the CAI lies in the fact that computer are machines and no machine can ever match the human beings for effective interaction with he human beings.

The emotional touch, warmth and sympathy as well as the heart to heart link established in teacher pupil interaction is not possible in the CAI and it is why computerization will never take place of the teacher.

Computer Managed Instruction

Dear Students, you have understood the concept and applications of Computer Assisted Learning. We're going to a higher level of using computers in education. Computer Managed Instruction, or CMI, is a management administration system that tracks students' progress and performance.

CMI is the use of computers and software to manage the instructional process including student registration, student (individual and group) performance, scheduling lessons or lectures, monitoring the course/lesson performance and other training management functions. CMI can be used in a traditional classroom setting with a Computer Assisted Learning focus or in the work environment, as Web-based training.

Teachers and Educational Administrators use computers to help them in:

1. Recording learning and teaching sessions for educators:
2. Maintaining the school, class, and student records;
3. Creating test items in question papers;
4. Scoring tests (allocating marks for an answer);
5. Performing statistical analyses (the mean, median and mode) on test scores;
6. Making diagnostic recommendations to help individual students;
7. Making prescriptive recommendations to overcome learning problems; and
8. Monitoring student progress.

Computer managed instruction is an instructional strategy whereby the computer is used to provide learning objectives, learning resources, and assessment of learner performance. Computer managed instruction (CMI) aids the instructor in instructional management without actually doing the teaching.

CMI programs incorporate features of wo rd processing, spreadsheets, and databases, and may be combined with specific kinds of linkages to create reports. A particular CMI program may have one or a combination of these features: the computer may provide tests, print reports, keep frequent records on student responses/progress, generate recommended materials or activities., and print reports on the proper forms.

CMI can refer either to the use of computers by school staff to organize student data and make instructional decisions or to manage activities in which the computer evaluates students' test performance, guides them to appropriate instructional resources, and keeps records of their progress.

Computer-Based Training: "An umbrella term for the use of computers in both instruction and management of the teaching and learning process. CAI (computer-assisted instruction) and CMI (computer-managed instruction) are included under the heading of CBT. Some people use the terms CBT and CAI interchangeably" Learning Circuits.

1. This type of instruction allows students to get more actively involved in the learning and discovery process

2. It can free the instructor / teacher to provide more one-toone assistance.

3. Computers in the classroom can provide students with the opportunity for autonomy and independent exploration, although currently they are being used outside of class.

4. At the elementary school level, students can practice their reading, spelling and arithmetic at a personal computer.

5. At the high school and university levels, students use word processors to write their papers, spread sheets to perform their calculations and databases for library searches, to name just a few of the possible capabilities of the technology.
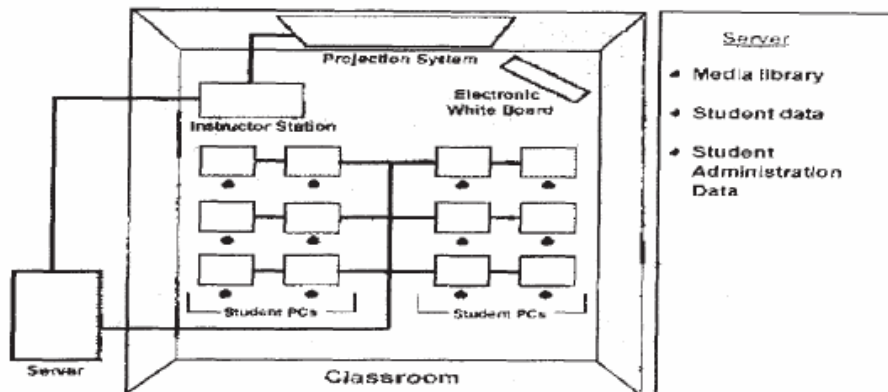
The Electronic Classroom

Fig 10.1 An Electronic Class room

One way of combining the advantages of the "traditional" classroom with the benefit of the computer technology is to create a classroom environment that allows instructors to use computers to enhance their lectures.

Electronic classrooms should be set up in a similar physical manner to the "traditional" classroom, but with multimedia equipment available for lecture and classroom support.

An electronic classroom provides each student with a computer at his or her desk in the lecture-style classroom (or in the cases of large classes, a computer for every two students). The students may still face the front of the classroom, although ideally, the configuration of the room would be adjustable for various styles of learning, but have access to their computerized environment at all times during the lecture. This would enable them to look at lecture notes on-line, take notes on-line, access relevant databases, run simulations during the lecture and communicate with other students and the instructor.

Multimedia in the Electronic Classroom:
The term multimedia suggests the use of a more than text-only applications, especially sound and video. Multimedia is defined by Phillips as a "computer-based device, which in addition to a textual display typically has a graphics capability, voice and music output and a live video display".

The multimedia configuration in the electronic classroom is a collection of computers and audio-visual equipment, often coordinated by one or two control panels. This setup allows the instructor the opportunity to use various devices to present information to the students, and provides the students with many different ways to learn, so as to retain and recall that information.

Multimedia technology offers the ability to perform learning tasks in such a way that the students are "in control, actively guiding the learning process and tailoring it to their individual needs". Thus, multimedia in the electronic classroom is the next step toward educational reform.

Advantages:
Having technology in the classroom allows for more student centered learning, thereby providing teachers with more one-to-one time with small groups, which aids in improved student-teacher relationships. Research data revealed that technology education can lead to an increase in motivation and creativity, as well as a lessening of the difference between the "best" and the "worst" students, by bringing up the lower end of the class.

Limitations:
However, a drawback to some of the current uses of computers in the classroom is that they tend to emphasize individual learning at the expense of group learning and at the expense of instructor interaction. While it is important that students have the opportunity to work independently and at a pace best

suited for their own needs, it is important not to lose sight of the social aspects of the learning environment and some of the benefits of the traditional classroom. It is not necessary that computers isolate users, they can be used to bring students together to interact socially. It is possible in a special type of classroom designed specifically for cooperative learning and multimedia instruction -- the electronic classroom.

What are the basic purposes of CMI?

The purpose of CMI is to diagnose student-learning needs and prescribe instructional activities appropriate for the needs assessed. This assessment can come from tests on different levels of instruction, which show where the student is lacking. The instructor can then choose appropriate objectives, modules, lessons. and courses in the curriculum for the student to study.

1. Learning Management:

The student has the option of proving mastery of the objectives through module tests that can be taken immediately, or after completing the instructional activities. The student is also involved in deciding which modules to pursue in which order. The pace at which to complete the modules is up to the student since the activities are mostly instructor-free.

An example of a possible CMI system designed for Mastery Learning is shown in the picture below. Each student will have a slightly different design as it is geared toward the individual.
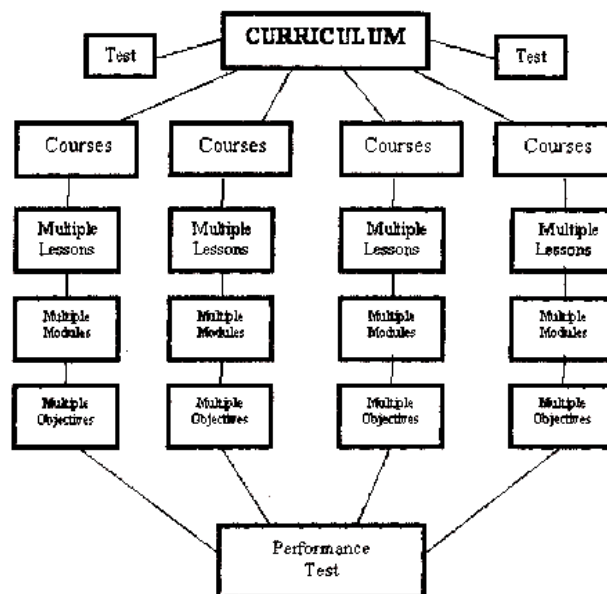

Fig. 10.2 Stages of curriculum

The instructor develops the curriculum in stages consisting of objectives, modules, lessons, and courses.

There are one or more instructional objectives within each module. When the student meets those objectives, the module is completed. One or more modules compose a lesson, one or more lessons compose a course, and one or more courses compose the entire curriculum. How many objectives, modules, lessons and courses are involved depends on the student's objectives and the instructor's decision on the appropriate materials to meet the student's goals.

A student's performance is typically evaluated by tests, and then instructional prescriptions developed from the results. If a student does not reach the appropriate score on a test of mastery, then learning activities can be assigned to help the student reach mastery. When the student completes the activities, he or she may be tested again. A student must master one module before moving on to the next.

A student may also have the option to test out of a module altogether by proving mastery on a test and/or additional summary tests on the lesson level, course level, and curriculum level. The test-evaluation-prescription process, indicative of CMI, continues until the student demonstrates the mastery of all learning objectives.

2. Computer-based Testing, Progressive schools use computerized testing for tracking student progress and achievement. Teachers may develop and enter their own test items into a test generation program, but the validity (the extent to which measurements correspond with criteria) and reliability (same results over repeated administrations) must be established first. The teacher should regulate the number of items and coordinate them with learning objectives.

In some progressive educational institutions, tests are kept on computer or students take tests, which are "scanned" (optical scanning) and scored by the computer; with reports sent to the teacher. The instructor can scan the test forms using an image scanner. Intelligent imaging technology can correct image distortions in many imperfect scans, allowing one to choose from nearly any document scanners without sacrificing data capture accuracy.

Computer managed Reports can provide complete information about the statistical properties of the test, such as the mean, mode, median, standard deviation, standard scores, percentile ranks, standard error of measurement, and other properties. As computers become more available in classrooms, teachers will use them for assistance with paperwork and testing.

3. Recordkeeping. CMI technology is especially suited for 'is recordkeeping. Electronic gradebooks enable us to enter student scores and then simply perform additional functions (weighing, averages, etc.) on those scores. Many of the electronic gradebooks are designed to record and average scores, and prepare reports. Other advantages including saving time, compute r-gene rated report cards, and recalculation of grades when changes are made by the instructor. One disadvantage of electronic gradebooks is the inflexibility of the grading system.

4. Archive (storing): with features for Search and Retrieve of Student Data. Image-enabled grade books have advanced test administration features for: Data validation
- Test form archiving (record keeping) and
- Retrieval.

It combines integrative powers with Excel programs for

• Automatic test grading, of students in different batches
• Analysis and reporting of student progress

Integration with the present school / college / university information systems.

Other Applications of CMI: Perform an Online-Based Assessment the examinee performs some task that requires an in-depth understanding of a skill rather than just reciting knowledge or recalling facts. Performance- based assessment has been used in business and management for many years, and is being used in educational areas. One area of interest is the use of technology in performance-based assessment.

Computer Simulations Assessment: These allow the teacher to see only a finished product of the student's work, not how the student arrived at that product. Information on the student's decision-making process would provide valuable information for teachers. Videotaping is another use of technology in assessment, which has been widely used.

Portfolios Assessment: One of the most widely used types of performance- based assessment is portfolios. Many business schools using portfolios do not manage them with technology, which could ease the physical burden of dealing with and storing large amounts of information. Some schools do use technology in the management of portfolio.

The Benefits of CMI:
1. With the flexibility of CMI systems, the instructor can choose appropriate objectives and activities in the curriculum based on a specific student's needs.

2. If it is conducive to the subject, the student can also decide in which order to meet the objectives. The sequence of modules is flexible.
3. The student can also study and progress at his or her own pace as the CMI system is basically instructor-free.

The Limitation of CMI:

The limitation of this type of system is the need for a central computer system that would allow the instructor to identify and control the student's activities in different locations at different times. With the expansion of cable modems, this limitation is steadily becoming a non-issue, except in remote areas.

As technology increases, more and more individuals will have the benefit of a CMI system as an option for training. Since it is a system that is geared more toward improving student's abilities, more than other standard educational systems, it can prove to be a more beneficial type of training.

10.7 LET US SUM UP

In this unit we have
• Touched upon need and origin of Computer assisted instruction
• Defined Computer assisted instruction
• Discussed the modes of Computer assisted instruction
• Discussed the advantages, limitations and drawbacks of Computer assisted instruction

10.8 QUESTIONS

1. What are computers managed Institutions?
2. State the meaning of Computer Assisted Learning.
3. Discuss the advantages & limitations of CAL.

10.9 REFERENCES

1. K.L. Kumar 1996, Educational Technology.
2. Dr S.K Mangal 2001 Foundations of educational technology
3. R. C. Das 1993 Educational Technology A Basic Text
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11

PRACTICAL WORK

Preparation of Programmed Learning Material (Linear) covering 10 or more frames.

Unit Structure

11.0   Objectives
11.1   Introduction
11.2   Steps involved in writing linear programme
11.3   References

11.0 OBJECTIVES

After reading this unit, you will be able to:
- Prepare a linear programme

11.1 INTRODUCTION

The process of developing a programme is highly dynamic, challenging and time-consuming exercise. In writing a programme the programmer must be skilful and pragmatic. The content structure must be closely linked with terminal behaviour.

11.2 STEPS INVOLVED IN WRITING LINEAR PROGRAMME

The major stages
1) Preparation
2) Writing the Programme
3) Tryout and revision

1) Preparation a) Select a unit or topic Three essential factors are involved in this step. The programmer must select the subject matter with which he is familiar. Secondly, he must restrict himself with a very small area of subject matter. Lastly, he must choose the subject matter that is easy to programme

B) Prepare a content outline
Outline should cover all the material that the programmer plans to teach. It should be a product of careful examination of textbooks and reference sources. If the programmer has not taught

the subject, he can consult an experienced teacher who can supply knowledge, specific examples and interesting illustrations.

c) Define your objectives in behavioural terms.

The writing of objectives involves both task description and task analysis. Task description is the description of terminal behaviour. Task analysis is the examination of component behaviours of enabling behaviours which the student must acquire in the process of reaching terminal behaviour. The pyramid of objectives that the programmer builds are the links in the chain between entering and terminal behaviour.

d) Construct a test of entering behaviour the prerequisite behaviours are the bases for writing the items for the test of entering behaviour-This will help the programmer to know the point at which he must begin his programming. If the group is heterogeneous, there must be considerable variety in entering behaviour A branching programme can be of great help if the children vary in their entering behaviour. Those, with large numbers of entering behaviour can skip their initial frames.

e) Construct a test of terminal behaviour At least 4 test items must be prepared for each terminal behaviour. These should be scrambled and should not follow an order in which the terminal behaviours are acquired. Peter Pipe suggests that the terminal behaviour test may be administered to the students before they study the programme. Materials which the student already knows must be deleted from the programme. Students must secure zero score on the terminal behaviour test if it administered before the programme.

Writing the programme

With the content outline and pyramid of behavioural objectives, the instructional events must be planned.

a) Present the material in frames. A frame is a small segment of subject matter which calls from particular student response Care must be taken to see that proper sequence is followed Student must be led gradually from simple to that which is more complicated Not more than one concept or fact to be learned is introduced at a time. New stimulus material is gradually introduced and the cue in with similar material is gradually withdrawn

b) Provide for active student response, the student is asked to make the response in every frame. A blank should appear as close to the end of the frame as possible. Although responses can be made either overtly or covertly, research has proved that overt responding group perform significantly better in the post test than the covert responding group

c) Provide for confirmation or correction of student response. Correct response must always be provided so that the student can compare his own response in it. This is the most distinguishing feature of programmed instruction.

D) Use prompts to guide student responses. Prompts are cues provided on the programme frame to guide the student for marking the correct response heresiarch has proved that 'in instructional procedures which furnish the student sufficient guidance to avoid mistakes is superior to procedures which only correct errors. Errors after they are made. Prompts have two purposes. They guide the student to correct response and they prevent the student from making unnecessary errors. Prompts may be withdrawn in the later stages so that the students reach the terminal behaviour without supporting cues. The gradual removal of the prompts is called Fading

e) Provide careful sequencing of frames

f) The sequencing of frames depends upon the description and analysis of the behaviour that the programme intends to teach. All the basic learning conditions like discrimination, generalisation, contiguity, practice and reinforcement can be embodied in the frame sequence

Try out and revision

Programme must be read at least by one subject matter expert to check for inaccuracies in the content. After editing the draft, the programme must be tested on a small group for validation. Responses are studied in detail and all difficulties met with the learner are noted. If it is a linear programme attention must be paid to the error rate. Conventional standards have been 10% error rate. For branching programme, the error rate for frames with questions should be higher. If it is not it implies that many branches are being wasted. Linear frames with high error rates and branching frames with lower error rates are then rewritten. The programme is then tested on large sample. Attention is directed to the gain in achievement which can be measured as the difference between pre-test and post-test scores. If these are inadequate, the programme must be written. Hence the cycle of programme writing is testing, writing, testing which is repeated until the programme is demonstrably brought up to the standard.

An example of a linear programme:
Concept: Angle and their types

Frame 1
A ray is represented by the sign where as an angle is ----------------- by the sign.

Response: represented

Frame 2.

Angles are of various types like, acute angle, right angle, obtuse angle, straight angle, etc. Acute angle is one of the various types of the angles, the other type is right ----------------------

Response: angle

Frame 3

The angles having values less than 90^0 are called acute angles. The angle of 50^0 is an ------------------- angle.

Response: acute

Frame 4

The angle having 90^0 is called right -------------------

Response: angle

Frame 5

The angles having values greater than 90^0 but less than 180^0 are called obtuse angles. The angle of 130^0 is an -------------------- angle.

Response: obtuse

Frame 6

The angle having value of 180^0 is termed as straight -----------------

Response: angle

Frame 7.

Response: obtuse

The angle of 120^0 is called as ---------------------- angle while the angle of 30^0 is termed as ---------------------- angle.

Response: Obtuse and Acute

Frame 9

In a straight line there are ------------------ degrees whereas a right angle has ------------------ degrees.

Check Your Progress

1. Prepare a linear programme to teach a concept in any of your papers.

11.3 REFERENCES

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2. K. Sampath, 1981 Introduction to educational technology
3. A Pannirselvam S Santhanam

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