

UNIT-1.

1. Educational Technology
2. Information Technology
3. Communication
4. Instructional media & aids
5. ICT

1. Educational Technology :-Education :

Education means any process of learning. It is derived from the Latin word "Educare" which means the art of teaching & learning. Education proceeds from birth to death i.e. it is lifelong process & school is not the only agencies of education. Other social agencies like home, religion, press, radio, library, cinema, television, computer are support for education.

2. Technology :

Technology means a science of techniques & method of doing getting things done related to any earth, science, math & environment. The term technology is derived from the Greek word "Tech" which means techniques of study. Technology can be understood as the effort made by people to satisfy their wants by working with physical objects & materials.

② The first person who made fire by striking two stones was one of the earliest technology. The development of material i.e. matches, lighter etc.

### Educational Technology:

Educational Technology defines as the systematic application of knowledge of science to practical tasks in education as technology is the systematic application of knowledge of science practical tasks in industry. Educational technology is as wide as in education system. It is concerned with the design & evaluation of learning, experience & with problem solving. Educational technology also include individual technology, instructional technology, behavior technology & systems technology.

### Definition:

\* According to Dr. B.P. Lala Educational Technology is the application of scientific method & techniques of education.

\* According to Council of Educational Technology of U.K Educational Technology is the development, the application & the evaluation of system's technique & able to improve the process of human learning

## Nature & Characteristics of Educational Technology

1. It is a science of design & field of Education.
2. It is essential for practical discipline.
3. It plays an important role in making the teaching scientific, objective, clear, simplified & interesting.
4. It gets together students, teachers & their psychological aspects.
5. It is bound to improve the teacher, the researcher & the teaching learning process.
6. It is influenced by advancement in the field of behavior science, physical science, electronics.
7. It takes the responsibility on development of methods & techniques for effective teaching learning.
8. It reduces the labour of teacher in teaching a concept.
9. It is an application science where in the researches & findings of psychology, sociology, behaviour science, Engineering, physical science, etc.
10. It is most applied to the field of education.
11. It involves Input, output, process of Education.

## Uses of Educational Technology:-

1. It helps in achieving different objectives of education by proper use of teaching models.
2. The use of Inf E.T can provide best talented teachers to large no. of students.
3. Education Technology (E.T) helps in improving teaching learning process.
4. Educational Technology helps to maintain & improve the standard of mass Education by using proper teaching material.
5. It help the researcher to acquire correct knowledge by less time.
6. It helps in providing proper feedback both to teacher & students.
7. It Helps in solving the problem in systematic way.
8. It helps for quick collection, storage, of information.
9. Improving the quality & standard of living.
10. It helps in self learning to the students.
11. It helps in equalizing educational opportunity.
- 12.

## Objectives of Educational Technology :— (5)

1. To identify the education needs of the learner.
2. To plan out teaching style or methods.
3. To design, modify & development of educational process.
4. To identify the latest environmental condition.
5. To provide opportunity for self study.
6. To develop the scientific model of teaching which helps for teaching learning process.
7. To manage the entire educational system.
8. To access the characteristics the two
9. To determine & formulate classroom objectives & behaviour of students.
10. To Evaluate the effectiveness of teaching strategy.
11. To provide appropriate process for lower grade students.
12. To modify the teaching learning process.

## ⑥ Aspects of Educational Technology :—

Educational Technology has 3 aspects :

- a. Input
- b. Process
- c. Output

### a. Input

- 1) It involves the entire behaviour of learner.
- 2) It includes previous achievements, ability & level of motivation.
- 3) It is concerned with the knowledge of learner.
- 4) It involves the skill of teaching & training method.
- 5) It is also concern with availability of teaching aids.

### b. Process :

1. It involves the device of learning experiences.
2. To generate situations for presenting the subject matter.
3. To select the appropriate teaching strategy.
4. To use appropriate teaching aids.
5. To identify suitable Techniques.
6. To use suitable reinforcement for effective learning.
7. To use appropriate school environment.

for developing good relation among students

### C. Output :

1. To identify the characteristics of learner
2. To analysis the stimuli & response.
3. To clarify the objectives of content.
4. It includes the satisfied behaviour of learners.

### Scope of Educational Technology

1. Identification of Educational goals & objectives.
2. Analysis of process of teachings.
3. Area of Teacher's training
4. Area of curriculum constructions.
5. Developing resources
6. Develop learning environment
7. Develop teaching storage.

### Scope of Educational Technology

1. Determination of objectives
2. Improvement in teaching learning process
3. Development of teaching " material
4. Improvement in teaching training
5. Development of teaching learning strategy
6. Proper use of audio visual aids
7. Utilization of the subsystem of education
8. Development of curriculum
9. Proper use of hardware & software
10. Provide feedback

### 3. Determination of objectives:

Educational technology provides different methods & techniques. The needs & requirement of the people is to be revised from moment to moment. Educational technology helps in fixing the objectives in the changing circumstances & changing environment.

### 2. Improvement in teaching learning process:

It helps in improving the teaching learning process & makes it more positive. It tries to discuss the concept of teaching, analysis of teaching process, variable of teaching, phase & level of teaching, principle of teaching and relationship between teaching & learning.

### 3. Development of teaching learning material:

Teaching learning materials are also importance in the teaching learning process. In this age of science & technology, the material of teaching can't be ~~unscientific~~. Only right type of material will be able to modify the behaviour of learner for making him a ~~useful~~ person for the society.

### 4. Improvement in teaching training:

Educational Technology can help in the training of teachers also. The use of video tapes, T.V will help the teachers to remodel & reset their teaching behaviour. It includes microteaching, term teaching & classroom teaching.

5. Development of teaching learning strategy <sup>9</sup>  
A strategy plays an important role in the hands of a teacher in every learning situations. The strategy has to be right one which should be according to the materials & is able to bring about effective teaching learning.

6. Proper use of audio visual aids

Audio-visual aids have always plays an important role in the teaching learning process. Audio visual aids are used according to the time. The software aids, hardware aids, computer, other equipments have to be used in the present type of teaching learning environment.

7. Utilization of Subsystem of Education :

Education Technology considers Education in a systematic & scientific way for achievement of Educational objectives. For the coverage of its systematic approach, it tries to include the topic hearings, theory system & practical system.

8. Development of Curriculum :

Educational Technology is concerned with the designing of a suitable curriculum for the achievement of the desire objectives. It is helpful in describing the ways of learning process & help to bring a better results.

9. proper use of hardware & software  
Now-a-days hardware & software are playing an important role in the field of educational system. Educational technology helps in the proper use of teaching aids. It tries to describe the resources in terms of their specific fun's, proper handling & maintenance.
10. provides feedback

It provides an appropriate feedback to the learners as well as teachers for bringing necessary improvements & implementation.

For this above purpose educational technology discuss the ways & means of suitable evaluation, technique, planning & objectives of teaching learning system.

D<sup>4</sup>P<sup>3</sup>, 20

Challenges of Educational Technology :

### Introduction

Now-a-days walk into any school across the country & you are sure to find some form of technology is implemented within a classroom in the school. Standard items such as calculators, text books, chalk boards are quickly finding way out of the door. Technology is usually at the top of any discussion within a school.

Technology integration &

Implementation can be very difficult strategy to develop and maintain in school. Several factors & challenges are stand in front of successful of technology development. Let's us look at what challenges may occurs within school & in classroom.

1. 21 century technology plan :-  
a. Examine technology budget planning  
b. Choosing effective tools & device.  
c. Resistance to change  
d. professional development  
e. Failure of technology  
f. Always be prepartre
1. Twenty first century technology plan :-  
A proper technology plan must be help to any technology integration into the classroom. When designing your technology plan makes sure to include the opinion & ideas of staff. If you don't take into consideration of the staff members in use of technology, that plan may be not satisfied.
2. Examine technology budget planning :  
A <sup>huge</sup> issue in education with technology is how much to spend on technology in the classroom. Stage Step budgets are shrinking fund in schools which affect the purchases.

⑫ of technology items. District shows should annually expect their budgets for hardware, software, professional development & technical development having a properly plan budget with adequate funds can help for technology purchase.

### 3. Choosing effective tools & device:

Each school couldn't use the same tools & device for learning. Each situation & classroom is unique. Gathering data & view that in the classroom to the students & teachers can open a new method on how technology is used in the classroom. Finding ways to make teaching easier & help to both researcher & teachers. Combine with technology budgets effective tools & device must be able to purchase. Finding the right tools for each school is help to its success.

### 4. Resistance to change:

Change in school classroom is hard. The changes in devices with effective ways the technology will benefit the teacher & students. One of the best way to help with this simply the teacher's experiment with new product. Sometimes you will not convince certain teachers or staff members to change their ways.

## 5. Professional Development :-

As a technology director in education this is one of the top concern when implementing technology into classroom. Teachers want professional development. Teachers need to be comfortable with technology. If they are not comfortable with the technology, they are not able to effectibilities with the technology.

## 6. Failure of Technology :

While implementing device & technologies i.e capable of providing a stable environment for assessment testing & formattest testing are important, understanding & preparing for failure is vital. Before you can success you must first learn who how to fail & to learn from your failures.

## 7. Always be prepare :

An Educational director can perform any tasks & able to accept any challenges related with educational technology.

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## Communication

The word communication had been derived from the latin word 'communis' which means "give & take or mutual sharing". Communication is one of common thing which means to concern, to tell, to show, to spread inform? It brings about unite of purpose, interest & efforts of both teachers & learners. Education with its co-related activities of teaching & learning & interaction bet<sup>n</sup> teacher & learner. Objectives of communication refers to transfer of thought, Inform? & commands by sensory organs. Communication takes place bet<sup>n</sup> the teachers & student within any school or institution.

### Definition:-

- \* According to dictionary def<sup>n</sup> "To communicate each is to say or share, transfer of inform? & ideas.
- \* According to Wilberg Schramm communication is concerned with all the ways in which inform? & idea are exchange & share.
- \* According to Merriam communication is a process of mutual exchange of thoughts, ideas & Impions.

### Characteristics :-

1. It is a process with some purpose
2. It is a social interactions of idea & knowledge.
3. It is a universal process.
4. It is a continuous phenomenon.

5. It can be intentional or unintentional. (15)
6. It includes both transference & understanding of meaning.
7. It can be verbal & nonverbal.
8. It helps in the release of emotional expression or feelings
9. It occurs everywhere.
10. It creates relation b/w sender & receiver.

### Elements of communication :-

1. Communication context
2. Source/communicator or sender
3. Receiver
4. message
5. Symbol
6. Channel
7. Encoding
8. Decoding
9. Feedback
10. Noise

### 1. Communication context :-

- a) It related with Physical environment i.e. classroom or party or surroundings
- b) Social environment i.e. the relationship b/w teacher & student.
- c) Psychological environment i.e. formal or informal.

### 2. Communicator :-

A person who provides verbal or nonverbal inform<sup>n</sup> to someone. When the source is a person he is called as sender or

⑯ teacher .

### 3. Receiver

A person who receives the data of receiver sender is known as receiver.

### 4. Message :

Message is come from Latin word "mittre" which means to send a set of verbal symbols or nonverbal symbols, written form, figures or words.

### 5. Symbol :

A symbol is something that gives an idea and inform through pictorial form

### 6. Channel :

Channels are the media of communications which including visual aids, auditory aids & sensory organs

### 7. Encoding

Encoding is the process of using symbol to express the idea or feelings.

### 8. Decoding

It is the process by which the receiver converts the message.

### 9. Feedback

It is the response a receiver gives to sender as a result of senders message.

### 10. Noise

Noise is an element of communication which may be help or may be disturb to the

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senders inform.

## Types of communication :-

1. Speaking & listening

2. In this by writing & reading

3. Visualizing & observing

4. Auditory & Hearing

5. Speaking & listening :-

In this type of communication interaction is face to face b/w sender & receiver. Important characteristic of this is eye to eye contact. This type of communication is found at everywhere. It is more effective because here the listeners can ask question, clarify doubts & gets satisfaction. This type of communication occurs in meeting, seminar, class room, conference room etc.

2. Writing & reading :-

In this type of communication the physical part of both sender & receiver are used when in writing purpose the sender use his hand & mouth, tongue when in reading purpose the receiver use his mouth & eye. This type of communication occurs in newspaper, magazine, books.

### 3. Visualizing & observing :-

In this type of communication the person is physically separated from the communicator & is able to tell the impact as films on television.

### 4. Auditoring & Hearing

In this type of communication the receiver also physically separated from communicator. In this type of communication the physical part of receiver i.e. ear should be perfect & the physical part of sender i.e. mouth should be perfect.

## PROCESS OF COMMUNICATION

OR

### SMCR MODEL OF COMMUNICATION

1. Sender / source / Encoder
2. Receiver or destination
3. Channel
4. Message
5. Feedback

### Barriers of communication

1. physical barriers
2. Language barriers
3. Psychological "
4. Background "
5. Organizational "

# 1. Physical barriers:

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## i) Environment

- ii) Noise
- iii) distance
- iv) Health problem
- v) Time

i) Environment :- The environment where the communication is taking place has an effect. The atmosphere, temp<sup>re</sup> have a effect on communication.

ii) Noise :- Noise is a type of disturbance which creates problem for communication. That noise are of various types :- a) physical noise  
b) audio noise  
c) visual noise  
d) cultural noise

iii) Distance : physical distance b/w sender & receiver specially help on oral communication but if the distance is spread or large, there is create communication disturbance.

iv) Health problem : Uncomfortable sitting arrangement may irritate the students which students & teachers have any physical problem related with eye, ear, mouth, it creates various problems for communication.

v) Time: If the communicators take class at wrong time i.e. during lunch time or game period that creates problems for proper communication.

## 2. Language barriers:

Language is the vehicle for communication. Unclear sound of the teacher or high sound language of the teacher make the communication meaningless. Sometimes sender & receiver don't understand each other's language which creates language barrier.

## 3. Psychological barriers

In inter personal communication some psychological factors like disinterest, -ve attitude, unhappy & unsatisfied.

## 4. Background barriers:

If the previous experience of receiver have been dissatisfaction, the result will be -ve impact on communication.

## 5. Organizational barriers

### i) Rules & Regulation

Stringent rules & discipline may create an atmosphere where in communication becomes formal & rigid.

### ii) Choice of media

Wrong choice of media affects communication.

### iii) Group size:

Number of students in a class has an effect on communication :-

## 4. INSTRUCTIONAL MEDIA & AIDS

### Instructional media :-

The word media comes from the latin word "medies" which means middle. Teaching media can be broadly defined as any person, material & equipment that establishes the cond' of the students acquire knowledge, skill & attitude. In this sense teachers, books, computers, image & environment are also known as media. Instructional media covers whatever the teacher uses to involve all the five sense of sight, hearing, touch, smell, taste while presenting his/her lessons. Instructional media are carried intorm' to fulfill objective in a teaching learning situations. They are very important in language teaching, symbol teaching & sound teaching.

### Types of Instructional media & aids

- i) audio aids ii) visual aids
- iii) audio visual aids

#### i) Audio aids

Ex:- audio, tape recorder, audio cassette player

#### ii) visual aids

Ex:- chart, black & white board, maps, pictures, text books, projector, print materials.

(22) Audio visual aids:-  
LCD projects, T.V, computer, VCD player  
i) Audio aids :-  
we learn through our sense organ. Sense are the ways of knowledge. All the sense organs help us in understanding the environment. Most of the knowledge which we acquire from school, house, society through our sense organ. Audio aids help specially for blind students.

### Advantages of Audio aids

1. It helps to make learning process more effective.
2. It helps to blind students for acquire of knowledge.
3. It builds interest & motivation teaching in classroom.
4. It helps to reduce the labour level of teacher.
5. It is better for large classroom.
6. It provides two dense & experience study

### Disadvantages:-

1. Technical problems
2. Students disatraction
3. Expensive
4. Time consuming
5. Needs space

- \* Using instructional media, the instructional device prepared by the teacher
- \* The teaching aids are used to provide an experience about the lesson for the children since they are seen, heard or both or blind & deaf. Today the teaching option special topics in science facilitated through internet.
- \* Using instructional media such audio visual tools which range from the simplest stones, chalk board to video tapes & computers. Now refers to as instructional media.
- \* Audio visual materials wider use in teaching science can be grouped into the following types:
  - a) Real object & specimen - Ex- soil, flowers, insect & animals.
  - b) Models (globe, solar system, layer of earth, graphic material such as political maps, mountain pictures)
- \* Using instructional media some audio visual <sup>aid</sup> that ~~give~~ help greatly in teaching science, which are usually found in schools that are microprojector, video tape recorder, television set, radio & camera.
- \* A general listing of education media for teaching & learning science includes the following:-
  - a) Textbooks      c) documents      e) posters
  - b) Newspapers      d) cartoon pictures

23 Visual aids :-

We learn through our sense organs. Sense organs are the ways of knowledge. All the sense organs help us to understand the environment. Most of the knowledge which we acquire from school, home, society through our sense organs. Visual aids help specially for deaf students. For example the boards serve as an excellent medium for joint student-instructor activity in the classroom.

### Advantages

1. Visual aids such as pictures, drawings & photographs are especially effective because they provide common visual imagery for both instructors & students.
2. It especially helps to deaf students for acquire of knowledge.
3. It serve as an excellent medium for joint student instructor activity in the classroom.
4. It helps to reduce the labour level of teacher.
5. It creates the interest of the students for study.

### Disadvantages

1. Technical problems
2. Students disattraction
3. Expensive
4. Needs space
5. Needs

### 3. Audio visual aids:-

We learn through our sense organ. Sense organs are the ways of knowledge. All the sense organ help us in understanding the environment.

## Concept of ICT

ICT stands for Information & communication technology. It is an another term of Inform<sup>n</sup> technology which plays a role of communication & the integration of telecommunication, computers, as well as necessary softwares, audio visual systems which enable user to access, store & transmette of Inform<sup>n</sup>

The term ICT is also used to refer to gathering of audio visual & telephone networks with computer networks through a single link system. However ICT has no universal definition, as the concept, methods & applications involve in ICT are constantly related with us on daily basis. The broadness of ICT covers any product that will store, recover, transmit or receive Inform<sup>n</sup> electronically in a digital form. Ex:- personal computer, E-mail etc.

## ICT in Education :-

Today society shows the ever-growing computer centric life style which includes the rapid use of computers in the modern classroom. Inform<sup>n</sup> & communication technology can contribute to universal access to education, equity in education, delivery of quality teaching learning, teacher's professional development & more efficient education management.

## Characteristics of ICT in Education

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1. Gains in understanding & analytical skills.
2. Development of writing skills.
3. Development of higher level learning style.
4. Development of self confidence.
5. Opportunity to collaborate on assignment with people inside or outside the school.
6. ICT facilitate sharing of resources & advice.
7. Easier planning & preparation of lessons.
8. Easier communication with teachers.
9. Increase environment of parents in their children's learning & capability.
10. Greater flexibility in, when & where tasks are carried out.
11. Access to up-to-date, teacher & school data.
12. Computer use during lessons motivated students.

## Importants of ICT

1. Developing proper study habits.
2. Improving vocabulary.
3. Development of decision making ability.
4. Developing reasoning & thinking power.
5. Developing communication skills.
6. Developing understanding & application concept.
7. Developing risk taking capacity & tolerance.
8. Developing different source of Inform.
9. provide correct inform & data.
10. It help in qualitative improvement of

Scope of ICT in education

1. Quick access to information
2. Easy availability of updated data.
3. Connecting geographically regions.
4. Wider range of communication media
5. Helpful for lower level students

1. Quick access to Inform? :-

Inform? can be accessed in a second by connecting to the Internet through web page

2. Easy availability of updated data

Sitting at home or at any comfortable place, the desire Inform? can be accessed easily. This helps to the students to learn the updated data. Teachers can keep themselves to latest teaching learning strategy & related technology.

3. Connecting geographically regions :-

With the advancement of ICT, education does not remain restricted within 4 walls of educational institution. Students from different parts of the world can learn together by using online resources. This would result in the increasing of learning process. ICT can contribute in shifting the focus on learning & teaching. ICT helps students to explore knowledge through self-studies. Teacher can keep the students by directing the right direction towards effective learning.

4. Wider range of communication media (29)  
With the advancement of ICT different means of communications are being introduced in teaching learning process. Offline learning, Online learning are some of the resources that can be used in educational institutions.

### 5. Helpful for lower level students

ICT can help to a lower level students as per his capability & interest. Large classrooms have always been a challenge for the teacher to consider the needs of every students in the class. ICT creates interests upon the topic for lower level students & helpful for development of knowledge.

### Uses / Advantages of ICT

1. Use of ICT in remedial teaching.
2. Use in psychological testing
3. Use in ICT in online tutorial.
4. Use of ICT in developing laboratory.
5. Use of ICT in developing reasoning & thinking
6. Use of ICT in developing instructional material.

### Questions as selective

1. What do u mean by education Technology? Describe its nature, objective, advantages & challenges.
2. Write the concept of communication, also describe its process, elements, types &

(20) 3. Describe the concept, importance, characteristics & scope of ICT.

## UNIT-2: ICT IN EDUCATION

### Flanders system of interaction analysis

During the year of 1959, a category system of interaction analysis was developed by Ned A Flanders. Flanders system is easy to handle & can be used as a feed back technique in teacher training. Flanders system is an observational tool used to classify the verbal behaviour of teacher & pupils as they interact in classroom.

Ned A Flanders standardized 10 categories interaction analysis. This is known as Flanders' <sup>interaction</sup> analysis category system (FIACS).

#### Basic Assumptions

- \* Mostly the classroom is in verbal communication i.e either the teacher is speaking or the students are speaking when teaching process goes in the classroom.
- \* Teacher's classroom behaviour highly influence the learner's behaviour.
- \* The classroom verbal behaviour of the teacher & students can be observed with higher reliability.
- \* In the classroom, nonverbal behaviour also occurs but that can't be measured.

③

Flanders interaction technique  
consists of 10 categories. Out of ten seven  
categories for teachers, two categories for  
students, one categories for silent.

### 1. Teacher's seven categories

1. Accepts feelings
2. Praises or encourages
3. Accepts or uses of idea of pupils
4. Ask questions
5. Lecturing
6. Give direction
7. Justifying / criticizing Authority

### Two Categories for students

1. Initiation
2. Response

### One categories for silence

1. Silence / confuses

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

	1	2	3	4	5	6	7	8	9	10	
1						1					
2			1	1					1		1
3					1				1		3
4							1				3
5		1							1		4
6								1		1	4
7			1	1							4
8			1	1				1			4
9			1	1				1			4
10		1	4	3	3	4	4	1	4	4	10 38
Total	1	7	4	3	3	4	4	1	4	4	

### Percentage of category

	Column - 1	%
1	1	$\frac{1}{38} \times 100 = 2.63$
4	2	$\frac{4}{38} \times 100 = 10.52$
3	3	$\frac{3}{38} \times 100 = 7.89$
3	4	$\frac{3}{38} \times 100 = 7.89$
4	5	$\frac{4}{38} \times 100 = 10.52$
4	6	$\frac{4}{38} \times 100 = 10.52$
1	7	$\frac{1}{38} \times 100 = 2.63$
4	8	$\frac{4}{38} \times 100 = 10.52$
4	9	$\frac{4}{38} \times 100 = 10.52$
10	10	$\frac{10}{38} \times 100 = 26.31$

99.95%

## Method of Area Interaction

1	as Category	V.
1	Accept feelin	2.63
2	Encourage	
3		
4		
5		
6		
7		
8		
9		
10		

## INDIVIDUALIZED INSTRUCTION

Individual instruction is the method of instruction in which the instructional technology & learning are based on the ability & interest of each learner. Individualized instruction refers to use of resources & assessment to meet the needs of one particular learner. It ensures that a student is getting the proper guidance, flexibility & learning support. To expand his knowledge. A learner's profile gives an educator information that shows the student's strength & weakness.

### 34) Need of Individual Instruction

1. To educate the students in proper manner.
2. It improves the knowledge of students.
3. It is used to design circular based on students performance
4. Improve listening & writing practice of students

### Principle:-

1. The learning environment is supportive.
2. The learning environment promotes independent, interdependent & self motivation.
3. Assessment practice are an integral part of teaching learning.
4. Students are challenged & supported to develop level of thinking.
5. Students need, background & interest are reflected in learning programme.
6. Learning connects strongly with practice

### Advantages of Individual instruction

1. Learners can gain quality of education from teacher.
2. Students can easily learn & improve their subject on speedy way.
3. It helpful for development of personality.
4. It creates focus on regular exercise of Academic subjects.

## Limitations :-

1. Need to spend more time
2. Maintain each student record in classroom
3. Leads to more complexity
4. Barriers of social environment
5. Expense is more.
6. Personality of teacher
7. Time management is complex in individual instruction.

## PROGRAMME LEARNING

Programme learning is a research based system which helps teacher's work successfully. The method is guided by & research done by no. of educators & psychologists. The learning material is a kind of text book or teaching machine or computer.

P. Programme instruction is a process of arranging the material to be learnt into a series of sequential stage steps, principles & understandings.

### Principle of programme learning

#### 1. Objective, specification

which means identifying the behaviour of learner will be able to perform the programme.

#### 2. Small, step, size

which involves dividing the information into small units.

### 3. Success or failure:

This means that error & failure must be avoided at all cost because they create obstacles for learning.

### 4. Immediate feedback:

In order to ensure success & certification, the learner must know that ~~that his~~ his action is correct.

### 5. Self confidence:

It is used for programme development.

### Types of programme learning

Mainly programme learning are 3 types:-

- Linear programme learning
- Branching programme
- Mathematics

#### a) Linear programme learning

It is one in which every learner follows the identical sequence i.e. the learning system are prearranged by the teacher. This type of programme style is associated by Dr. Skinner.

In 1958.

#### b) Branching programme

It is one where the particular response are given by learner with elimination of another alternative choice. The style is associated by Norman Crowder in 1960.

## ③ Mathematics programme Learning

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It is the one in which there is systematic application of reinforcement by teacher. This programme style is associated by -

### Steps In programme learning

#### 1. Topic Selection

The programme should select most familiar topic, otherwise, he has to take the help of another subject.

#### 2. Contents outline

After a topic selection its outline must be prepared which cover all the materials, plans & assessment to teach.

#### 3. Instructional objectives

Instructional objectives must be formulated which involve both task description & task analysis.

Instructional objective helps to achieve terminal behaviour.

#### 4. Entry skill

The learner should have some pre-requisite ability. Ability & skill to understand properly the new programme. This experience is called entry skill. A suitable programme can't be prepared without proper assessment of entry skill.

#### 5. Presentation of material

Suitable format is to be decided for presenting the material from the educational point of view. Then the programme material should be presented in a sequence of frames arranged as steps.

③ To work terminal behaviour.

#### 6. Student participation

On analysis of the terminal behaviours one will find the critical response of the students.

#### 7. Terminal behaviour Test

It is also known as performance assessment. This provides the feedback to the programme & shows the effectiveness of the instructional material. The effect of programme can be ascertained by a higher level or experienced teacher.

#### 8. Revision:

Lastly the programme may be divided on the basis of feedback. The instructional materials may be edited & modified according to the needs & requirement of the target.

Programme learning is self instructional device. A rapid learner can cover the material quickly & slow learner may proceed on his own idea. It helps the learner to teach himself at any place. The analytical thinking & self direction of learners are also promoted through the use of programme learning material.

#### LINEAR PROGRAMMING

This style of programme is associated by Skinner. It is also called straight line programme or single track programme. A linear programme is called a straight line programme that means the students follow the way of teacher. Even the learner response are controlled by teacher.

Also In linear programme the learner is helped to avoid errors in making response by means of prompt.

### Features of linear programme

1. All learners travel the same path of learning.
2. Student's response are fully controlled by the teacher.
3. Each learner works at his own speed.
4. Used mostly in lower classes.
5. Useful for students with low & average I.Q (eye que)
6. Programme is arranged in small steps which contains single idea or example.

### Limitations of linear programming

1. Learning is a dull process.  
Because of the arrangement of the stimuli & response of in this programme, Learners find learning as a uninteresting uninspiring dull process.
2. No freedom or choice

In linear programming all responses are controlled by the teacher. There is no freedom for the students. It creates uninterested learning.

### Moral, Page

Since the subject matter is involved in this type of programming. The learner

(4) Is taken through their subject one after another. So more pages are need in a text book.

#### 4. Student's interest are not taken

The order of presentation of steps in this programme is logical. & not psychological naturally student's interest are not to be taken.

No possibility for development of knowledge.

- This type of learning is not helped for the development of imagination & knowledge.

#### 5. Rigidity of students :-

There is no scope for flexibility in linear programming because of the rigid path prescribed by the teacher.

#### 6. May not be suitable to all students :-

We know that students differ in their ability & interest. The particular order or sequence followed in a programme not suitable for students.

#### 7. Useful in limited Area

Linear programming is used in a limited area but it is not helpful for mathematics & science.

### B. BRANCHING PROGRAMME :-

Branching programme is developed by Norman A Crunden. So it is known as crundens model. The small step principle is not generally followed in branching programme. The steps are large & the questions

multiple type. Depending on the responses selected by the learners. Those who choose wrong answer are directed to remedial teaching.

### Features of branching system

1. The student is required to make a choice out of several choice 2) Here, the student's response are depend upon his knowledge.
2. Freedom of choice is available in this type of programming.
3. The subject matter is arranged from one or two paragraph or even in one page.
4. It is also called intensifying programming.
5. Here, the learner is more alert & concentrate on subject matter carefully.

### Advantages of Branching programme:

1. It reduces unnecessary repetition responding.
2. The space shapes the amount of learning time.
3. When a programmer knows that learners' entry behaviour differ from each other.
4. Branching programme is more suitable.
5. It's capacity for explaining "why".
6. A response is either correct or incorrect.

### Limitations:

1. It is very difficult to ask questions on the entire subject.
2. This system is used only after standard-V.
3. The multiple choice questions provided in

- (1) this programme leads to guess without understanding.
4. Teacher needs skill, bore preparation of question.
  5. Branching programme can't be suitable for all subjects.
  6. It takes more times in case of math.
  7. Difference between Linear & Branching programme?

Linear programme &

1. Linear programming is associated by Skinner whereas as branching programme is associated by Norman A. Crowder.
2. Linear programming based on Skinner's operant conditioning theory whereas as branching programme is based on configuration theory.
3. No. of steps are large in linear programming whereas no. of steps are small in branch programming.
4. A linear programming question related with till in the blank type, whereas branching programmes is the question is related by multiple type question.
5. Response are controlled by the teacher in linear programming whereas response are controlled by learner in branch programming.
6. In linear programming purpose of response is fixing of learning whereas in branch programming purpose of response is measurement.

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of analysis of learning.

7. Linear programming is suitable for lower level classes whereas branched programming is suitable for higher classes.
8. In linear programming pages are in sequence. Usually text books type where as in branched programming pages are not sequentially.
9. Linear programme is more useful in concept formation whereas in branched programming more useful in concept comparison.
10. In linear programming it related with extrinsic type whereas in branched programming it related with intrinsic type of programming.

### C. MATHEMATIC PROGRAMME LEARNING

Mathetic programme is developed by Thomas F. Gilbert. In mathematics style "an exercise is the technical unit of learning". This type of programming follows the principle of backward chaining. The sequence of learning is reversed in a sequence of events that leads to the completion of complex units. The learner or the performer of the task will now have the satisfaction of having successfully completed the task. So mathetic programmes start with the final event & after learning it ~~But~~ mathetic can be used to learn problem solving skills & some rules in mathematics.

#### Advantages :—

1. Mathematic programme is rightly suitable for teaching.
2. This is more job oriented & work oriented.
3. In mathematic programme in the process of skill acquisition, transfer from teacher.
4. Chaining technique is one of the characteristic of mathematical style of programming.
5. It is a step toward technology of education.
6. In mathematic for task completion motivation is important factor.
7. This type of programming is more valid & meaningful for both programmers/teacher & learners.

#### Limitations :—

1. It involves a lot of time & energy.
2. This programme may not be suitable to teach all subjects.
3. Less freedom of choice.
4. Forming backward change is difficult for teacher.
5. This programmes lacks arrangements for individual learner.
6. This type of programming is technical.
7. Programmers need more skill & training.

# Challenges in Integrating ICT in school education

## Technology Integration :-

Technology integration is a term is used by the educator to describe effective use of technology by both teacher & students. Educational technology includes, computers, printers, internet & video conferencing.

## Teacher should note that :-

Teachers uses technology in order to teach the subject in a meaningful way.

## Lack of awareness :-

There is a lack of general awareness about the utility of ICT in education. This lack of awareness about ICT & they are used in education, even on the part of policy maker, administrator & educators makes it particularly difficult to deploy ICTs in the field of school education.

## Language barriers :-

English is the dominant language of Internet. An estimated 80% of online content is in English. A large proportion of the educational software produced in English language also. For developing countries where English language are created creates more barriers to education system.

## Inequalities :-

There are various types of students are present in a classroom but all students doesn't face all facilities.

Ex:- Students who have to access to computer at homes & in that case this facility are not available for other students.

## Need for training :-

Teachers provided evidences of the importance of training needed for professional development in integrating ICT in classroom teaching.

## Teacher's Time :-

Teachers stated that IT was placing more demands on their time. So that teacher noted that extra time was needed to learn new software.

## Capacity building of teachers :-

In most of our schools the teachers are over loaded. The use of ICT in the classroom or in distance education is not satisfied due to overload & more working condition. In such an environment, building the capacity of teachers so that they are equipped to deal with using ICT's in classroom.

## Selective Question

1. Briefly describe Flanders interaction analysis category system (FIACS).

2. Write the features & types of programme

\* Learning ore

What is programme learning? Write its merits & demerits.

3. What is classroom interaction analysis? Write short note on FIACS. Discuss the ~~short note~~ advantages & limitations of Flanders' Interaction.

### UNIT-3

## COMPUTER FUNDAMENTALS & APPLICATIONS

### Types, characteristics & features of computer

#### Meaning of computer:

A computer is an electronic device by which we can work easily, effectively & found an errorless results in a quick time periods.

\* It has the ability to store process & output the data. Computer helps to type documents, send E-mail, accounting work, data base management, presentation <sup>project</sup> & games.

### Characteristics of computer

1. Speed:
2. Accuracy
3. Versatility (coggonal)
4. Reliability
5. Diligence (অত্যন্তিক)
6. Storage capacity
7. power of remembering
- 8.

(4B) 1. Speed : A computer is a very fast device. It can carry out instructions at a very high speed - It can perform in a few seconds the amount of work that a human being can do in entire year. Some calculations that would have taken some hours & days to complete but it can be completed in few seconds using the computer.

2. Accuracy : Accuracy of a computer is high & the degree of accuracy of a particular computer depends on the instruction & the type of processor. But for a particular computer, each & every calculation is performed.

Ex:- The computer accurately give the result of division of any no. upto 10 decimal point.

3. Versatility : Versatility is one of the most wonderful thing of the computer. Multiprocessing features of computer makes it versatile in nature. In one moment it is preparing the result of examination, <sup>Prepare</sup> building of electricity bill, & helping in some official data.

4. Reliability : computers provide very high speed result with a high level of reliability. Thus computers never make mistakes.

5. Diligence : The computer is a machine, doesn't suffer from the human traits traits of tiredness. It also doesn't loses its concentration even after working continuously for a long time.

C - Storage capacity: The computer have a lot of a storage device which can store a large amount of data. Data storage is essential function of the computer.

D - Power of remembering: A computer can store or recall any information at any time. Even after several years, the information recall will be as accurate as on the day when it was saved to the computer.

Types of computer / Architecture of computer

Computer components are divided into two major category :-

- 1) Hardware
- 2) Software

1) Hardware:

The device of computers which have proper shape, size, weight & also it can be touchable is known as hardware.

Ex:- keyboard, mouse, monitor

2) Software:

The part of computer which are not touchable which have no physical shape but through software we can work related with accounting, financial, project prepare, etc.

## (50) 1) Hardware

Hardware is divided into 5 category

- a) Input Device
- b) Output "
- c) Storage "
- d) processing "
- e) Arithmetic logical device

## 2) Software

It is divided into 3 category

- a) System software
- b) utility "
- c) Application "

## Hardware

### a) Input device

The device through which data are entered into computer is known as input device.  
or

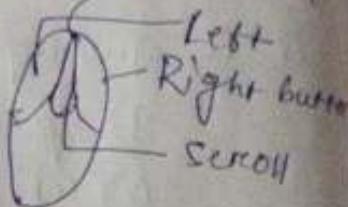
The part of computer which receives & provides data into computer is known as input device.

Ex:- Keyboard, mouse, web camera, light pen, joystick, touchpad etc, scanner etc.

Keyboard :- Keyboard provides alphabets, symbols & digits. Generally keyboard can be designed with 84 keys minimum & maximum 100, 102, 104, 108 are about. In keyboard there are 5 types of key

1. Alphabetical key (A, B, ..., Z)
2. Numerical key (0, 1, ..., 9)
3. Arrow key ( $\uparrow \downarrow \leftarrow \rightarrow$ )
4. Functional key (F<sub>1</sub>, F<sub>2</sub>, ..., F<sub>12</sub>)
5. Special key (Delete, back space, Numlock)

Mouse :- A computer mouse has TWO buttons & a scroll wheel which can also act as third button. To point an item means to move the mouse pointer so that it is touching the item.



### Wave camera

A wave camera is a video camera that receives the image in real time & send to the computer.

### Light pen

A light pen is a input computer device which allows the user to point, to display or draw on the screen or touchscreen.

joy stick → A joystick is an input device consisting of a stick that placed on a base & reports its angle or direction to the device it is controlling.

Touchpad Scanner → Scanner is a device that scans image, prints texts, handwriting text & converts it into digital image.

## b) Output device

The device through which data are released from computer is known as output device.

Ex:- Monitor, printer, projector, speaker, plotter

Monitor :- This device display all the data on the screen. Generally monitors are of 4 types

1. CRT monitor
2. TFT "
3. LCD "
4. LED "

These monitors are various size available in market such as 15", 17", 19", 22", 24" & 27".

Printer :- This device prints & release & test & picture data on a sheet so it is known as output device. Generally printers are of 2 types 1- 1. Impact printer  
2. Non-impact "

Impact printer :- Impact printers are 3 types:

- i) Dot matrix printer
- ii) Daisy wheel printer
- iii) Drum printer.

Non-impact printer :- It is 2 types

- i) Laser printer
- ii) Inkjet printer

Projector :- This device through the data as focus light on a near & clear screen, is visualized.

Speaker :- This device release the sound from the computer so it is known as output device (53)

Plotter :- A device that draws pictures on paper based on commands from a computer. They can produce continuous lights whereas Printers can only print in small size but Plotters use from different colour & diff. size

### C. Storage device or Memory unit

The hardware of computer which stores data temporarily or permanently i.e. known as memory unit. It is of 2 types :-

- i) primary memory
- ii) secondary "

i) Primary memory :- The memory unit which is used to activate a computer is known as primary memory unit. Primary memory are of 2 types :-

- 1) RAM
- 2) ROM

1) RAM :- RAM stands for Random Access Memory

- \* RAM is electronic in nature.
- \* RAM is volatile in nature.
- \* RAM is used only on computer.
- \* RAM contains the utility software.
- \* RAM is attached in motherboard.

## 2) ROM

(54)

- \* ROM stands for Read Only Memory.
- \* ROM is electromagnetic in nature.
- \* ROM is nonvolatile in nature.
- \* ROM is used so many electronic device.
- \* ROM contains system software.
- \* ROM is fixed with motherboard.

ii) Secondary memory :- The memory unit which is used to store the data permanently or temporarily, i.e. called secondary memory unit.

Ex:- Pendrive, C.D, memory chip etc

d. processing unit or control unit

This device which controls all the activity of all parts attached to with computer. So it is called control unit. The motherboard also called mainboard or acts as controller. The working capacity of motherboard is measured with Hz/MHz unit.

e. Emathmatic Logical unit

E.L.U helps to calculate all type of mathematical, logical, economical, statistical calculation within a nano second. It is also called microprocessor. It was first developed by Intel company in 1971.

## 2. Software

### a. System software :-

The software which is used to activate the system is known as system software. All the device working with computer as accessories hardware those have known as system software. System software contains the working procedure of hardware. If u buy a printer, the installation CD available with it is the system software!

### b. Utility software :-

The software used in computer which provides the utility data of computer i.e. known as utility software. The utility data are screen size, brightness, contrast, video, audio, graphics, image, colours, text, digit, language, date & time, font, font style, font size etc.

Ex:- Windows-xp, Linux, windows Vista

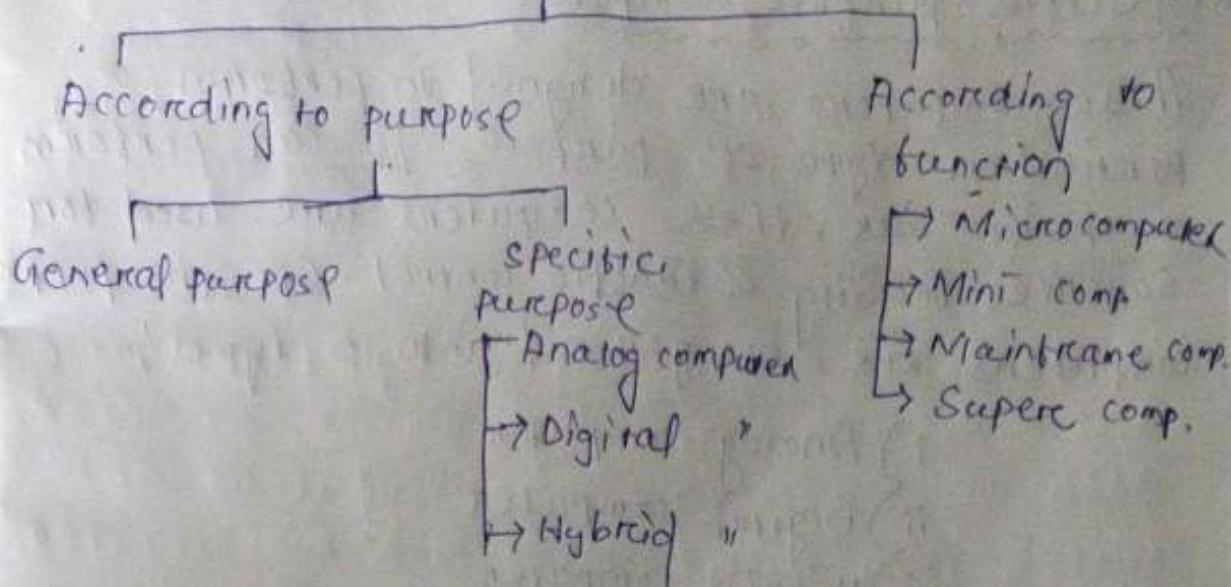
### c. Application software :-

The software which is used to perform a particular type of work by the user is known as application software.

Ex:- Tally, photoshop, M.S.office, M.s-excel,

Total Archie

# Types of computer / Classification of computer:



## Introduction:-

### According to purpose:-

According to purpose computer are divided into 2 categories :-  
1) General purpose computer  
2) Specific purpose computer

### General purpose computer

General purpose computer are designed to perform a range of task. These machines can be used for various application as well as business purpose application. These computer

are used in schools & homes for general purpose.

## 2. Specific purpose computer

These computers are designed to perform a particular type of purpose. It can perform a specific task, these computers are used for satellite tracking & traffic control. Specific purpose computers are categorized into 3 types:-

- i) Analog computer
- ii) Digital computer
- iii) Hybrid of computer

### i) Analog computer :-

Analog computers are mostly used for measuring frequently changing physical qualities like temp., pressure & speed etc. Analog computers are mostly used in engineering & scientific field.

### ii) Digital computer :-

A computer that operates with "inform", numerically or otherwise represented in digital form is known as digital computer. Such computer are processed data including text, sound, symbol, graphics & video into digital signal of "0" & "1". The computer is used in our home, office etc.

### iii) Hybrid computer :-

The computer which is designed with both the principle of analog & digital computer i.e. known as hybrid computer. For computational purpose these computers are used. The computers

are mostly used in hospital & medical field.  
Ex:- ECG machine, blood pressure monitoring  
instruments.

### According to Function :-

According to functionality of computer, computers are classified into 4 categories :-

- a) Micro computer
- b) Mini "
- c) Mainframe "
- d) Super "

#### a) Micro computer :-

Micro computers are the general purpose digital computers which consist of microprocessor, storage unit, input, output device like keyboard, mouse, printer, monitor, speaker, scanner etc.

It is the smallest computer in the computer family. Now-a-days it is most powerful for industry & business. These are also called personal computers. According to size microcomputers are 3 types :-

- i) Desktop computer
- ii) Laptop
- iii) Palmtop

#### b) Mini computer :-

It is a small digital computer, which is able to process & store less data than Mainframe computers & more data than microcomputer. It is also called mid range computers. These are designed from computing by several

people at a time in a small or medium size business. It is capable of supporting from 4-200 users at a time. These are multi user system used at college, university, research centre & office in industry.

### c) Mainframe computers :-

A Mainframe computer is high performance computer made for high volume processing, intensive computing. These computers are faster than micro-computer & mini-computer. These are the second largest computer according to capability & size.

Ex:- IBM ES0000, VAX-8000

### d) Super computers :-

Super computers are the special purpose machine which is used to design for a single & special purpose. A super computer has the highest processing speed at a given time of solving scientific & engineering problems. It can solve complex mathematical equation Complex mathema within a few time.

Ex:- CRAY-3, Cyber - 205.

### 3.4: Softwares (Application software)

#### M.S. Word :-

Microsoft word is a word processing software that enables you to create both simple & complex document. M.S. word provides tools to enable you to check the spelling of your document, create to merge letters & graphics. M.S. Word is a widely used commercial word processor designed by Microsoft. Microsoft Word is called M.S. Word.

By using M.S. Word we can prepare different paragraph, page, picture, symbol, table, shape etc.

#### How to start M.S. Word :-

- i) Click on start menu at taskbar
- ii) Then click on programme → M.S. Office → M.S. Word 2007
- iii) Click on the start menu on task bar → Run → winword → OK
- iv) Double left click on M.S. Word 2007 icon at desktop

Microsoft Word 2007 contains

- |                   |                           |
|-------------------|---------------------------|
| (1) Title bar     | (7) Ruler's bar           |
| (2) Office button | (8) Text area             |
| (3) Tabs          | (9) Quick access tool bar |
| (4) Ribbon        |                           |
| (5) Ruler         |                           |
| (6) Scrolling bar |                           |

## ① Title bar :-

The bar contains the file name, software name, minimize button, maximize button, restore button & close button. It is an horizontal bar placed at top level of the screen.

## 2) Office button :-

This is a pictorial button & replacement of file menu. It contains no. of commands in file menu.

## 3) Tabs :-

Tabs are as fine as menu in menubar. It contains all the option of commands. There are seven tabs normal in the screen.

## 4) Ribbon :-

This ribbon contains no. of option & all option contains no. of pictorial commands.

## 5) Ruler :-

It is the scale at top & left side of the page which helps to measure the page size of the document.

## 6) scrolling bar :-

There are two scrolling bar in the screen i.e. vertical scrolling bar & horizontal scrolling bar. It helps to scroll the script screen.

## 7) Status bar :-

This bar is placed at the bottom level of the screen. It provides the general information about the document such as page no, no. of

paragraph, no. of word etc.

## 8) Text Area

The page where the data are prepared as text.

## 9) Quick access toolbar :-

This bar contains the standard quick buttons of the commands.

Working with file menu / office button

### New :

This command is used to bring a new document.

#### Process :-

- (1) Click office button → click on "New" option
- (2) or press "ctrl+N"

### Open :

This option is used to open the files which are stored previously.

#### Process :- (1) Click office button → click "open"

- (2) or press "ctrl+O"

### Save As :

To store the document permanently in a particular location, this option is used.

#### Process :- (1) Click office button → click on "Save As"

- (2) → Type the name of the file → Save

- (3) or Press "ctrl+S" → Type the name of file → Save

## Save:

This option is used to save the data of a file  
process :-

- 1) Left click on office button → save
- 2) or press "ctrl+s"

## Use of Cut, Undo, Copy, & Paste

### 1. Cut :-

This option is used to cut the selected text  
(with copy)

process :- ①  $\text{ctrl} + \text{"X"}$

② 'X' ← Left click on 'X' icon

③ Hom → office clipboard → cut

④ Right click → cut

### 2. Undo :-

This option is used to go back steps from current event.

process :- ①  $\text{ctrl} + \text{"Z"}$

② 'Z' ← Left click on 'Z' icon

③ R.click → undo

### 3. Redo / Repeat

This option is used to go forward steps from current event.

process :-  $\text{ctrl} + \text{"Y"}$

② 'Y' ← L.click on this icon

③ R.click → Redo

## COPY :

This option is used to copy the selected text.

### Process

- (1)  $\text{ctrl} + \text{c}$
- (2) Home  $\rightarrow$  office clipboard  $\rightarrow$  copy
- (3) R. click  $\rightarrow$  copy
- (4)   $\rightarrow$  left click on copy icon

## PASTE :

This option is used to paste the copied text.

### Process :-

- (1)  $\text{ctrl} + \text{v}$
- (2) Home  $\rightarrow$  office clipboard  $\rightarrow$  paste
- (3) R. click  $\rightarrow$  paste
- (4)   $\rightarrow$  L.click on paste

## Find

This option is used to find particular word.

### Process :-

- (1)  $\text{ctrl} + \text{f}$
- (2) Home  $\rightarrow$  select  $\rightarrow$  find

## Replace :

This option is used to replace a word instead of another word.

### Process :-

- (1)  $\text{ctrl} + \text{h}$
- (2) Home  $\rightarrow$  select  $\rightarrow$  Replace