UNIT 3: INSTRUCTIONAL TECHNOLOGY

UNIT STRUCTURE

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3.1 LEARNING OBJECTIVES

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

- explain the meaning and definition of instructional technology;
- analyze the nature of instructional technology;
- examine the scope of instructional technology;
- understand the similarities and difference between educational technology and instructional technology.

3.2 INTRODUCTION

Survival in the modern world is becoming possible only by knowing more. Man makes progress on the basis of what he knows, what he thinks, what he can do and what he actually does with his physical and human resources. At present it has become important to improve the standard of education by raising the quality of instruction to meet the ever growing demands of the society. The instruction has significant role in human learning because most of the human learning is accomplished through instruction

while animal learning through conditioning. The systematic action which induce learning is known as instruction. The instruction stands for development of knowledge and beliefs. Instructional technology has come to our help in enhancing the learning opportunities and systematizing the instructional process for greater efficiency in teaching as well as learning. Instructional technology to reach large numbers in remote and inaccessible areas, remove disparity in educational facilities to the disadvantaged and provide individualized instruction to learners conveniently suited to their needs and pace of learning.

3.3 MEANING AND DEFINITION OF INSTRUCTIONAL TECHNOLOGY

Instructional technology is a newer concept in education. The results of teaching and learning whether formal or informal are called education. Education is literally a comprehensive process and imparting instruction in one of the sub-process of achieving the goals and objectives. The term instructional technology came into being in the late 1960s and James D. Finn Professor at the University of California is considered to be proponent of this term. During those years the term in use was audio-visual media, which included radio and television films. But over a period of time new technologies came into being and found its place in education; and this trend is continuing. Most of the new technologies that arrives were imported to education. There is a technology was developed to deal issues in education. Accordingly technology of instruction may be considered as one of the parts and sections of the entire event relating to educational technology. In a strict sense, instructional technology is concerned with determining and providing appropriate stimuli to the learner to produce certain types of responses for making learning more effective. Instructional technology means a net work of techniques or devices employed to accomplish certain defined set of learning objectives. Instructional technology implies the application of psychological and scientific objectives of learning. The most important example of instructional technology is 'programmed

instruction'. The programmed instruction and instructional technology can be used interchangeably.

The use of instructional technology can systematize the process of teaching-learning in both formal and informal teaching situations. The extension programmes can be improved if they are planned and produced based on the principles of instructional technology by invoking appropriate media and including some means of feedback.

Instructional technology can be well understood by going through the following definitions:

- E.E. Haden opined, 'Instructional technology is that branch of educational theory and practice, concerned primarily with design and use of messages which control the learning process.'
- The definition given by Unwin (1969) described instructional technology as: "The application of modern skills and techniques to requirements of education and training (instruction). This includes the facilitation of learning by manipulation of media and methods and the control of environment."
- As defined by S.M. Mc Murin (1970), "Instructional technology is a systematic way of designing, carrying out and evaluating the total process of learning and teaching in terms of human learning and communication, and employing a combination of human and non-human resources to bring about more effective instruction."
- Sharma (1989) defines instructional technology as a network of techniques or devices employed to accomplish certain defined set of learning objectives.
- AECT (Association for Educational Communications and Technology) has defined instructional technology as, "the theory and practice of design, development, utilization, management and evaluation of processes and resources for learning."

Instructional technology applies the principles and theories of psychological learning to get deep insight into the content, structure and sequence of instruction to develop instructional resources for

attaining desired learning outcomes. In other words, instructional technology works at shaping the instructional uses of the materials to turn them into instructional resources.

The focus of instructional technology is in using tools to facilitate student learning. It is not simply application of tools but beyond that as well. The tools that are being used by teachers for instruction are wide and varied, and range from writing boards to the iPad. It includes a range of tasks, such as designing and organizing the teaching content in relation to the tools being used for effective learning. In case the teacher is not able to achieve the desired outcome then he/she may analyse, modify the design, reorganize the content, and change the tools by going through a number of steps similar to the steps followed in action research.

In a nutshell instructional technology means development of instruction with media for effective teaching-learning process.

Further, Instructional technology is concerned with determining and providing appropriate stimuli to the learner to produce certain types of responses for making learning more effective.

Assumptions:

The instructional technology involves the following assumptions:

- The content matter can be divided into its elements and each element can be presented independently.
- The external learning conditions can be created by arranging the elements in a logical sequence.
- The appropriate reinforcement can be provided continuously by the use of instruction.
- The student can learn according to his needs and rate of learning.
- The strategies and tactics of instruction can be used for achieving certain well defined set of instructional objectives.
- The student can learn successfully without the physical presence of a teacher.

The instructional technology involves the strategies and tactics which can be used outside and inside the classroom teaching. Teaching is an

instruction but the instruction is not the teaching. The instructional technology can consist of the following content:

- Meaning and definition of Instructional Technology.
- Definition of Programmed instruction and its origin.
- Meaning, assumptions and structure of linear programming and its principles.
- Definition, assumptions, principles and structure of branching programming.
- Meaning, assumptions, principles and instruction of mathematical programming.
- Learner controlled instruction and computer assisted instruction.
- Development of Programmed Instruction Material.
  - Planning
  - Writing Frames
  - Evaluation.
- Adjustive devices for controlling individual differences.
- Priming and prompting devices.

3.4 NATURE AND SCOPE OF INSTRUCTIONAL TECHNOLOGY

Extension education is the process of teaching rural people how to live better by learning ways that improve their farm, home and community institutions. Since learning and teaching are always the keys to education, extension educators must understand at least the elementary characteristics of the process and be able to apply them in their work with people. The following inter linked components represents the nature of instructional technology:

- Teacher-learner friendly: It creates congenial environment for teaching and learning.
- Goal directive: The instructions designed clearly indicates the intended behavioral change in the learner.
- Effective communication tool: It is a composite of all the elements

of communication.

- Curriculum Reform: It is an effort towards making learning effective.
- Sequential learning: Planning allows linear learning both vertically and horizontally.
- Systematic application: Accessing all available resources and scientific knowledge.
- Composition of hardware and software: Written materials and soft devices will be made accessible.
- A process of improving learning methodology: Makes learning very participate due to provision of continuous stimuli and response.
- Supplement and support the efforts of the teacher: It does not replace the teacher but supports teaching in creating teaching and learning environment.

The scope of instructional technology are as follows:

- Determination of Objectives: Instructional technology provides different methods and techniques for writing instructional objectives in behavioral terms such as Bloom Taxonomy, Magar's Approach and RCEM Approach. The needs and requirements of the people and hence education need be revised from moment to moment. Instructional technology helps in fixing-up the right objectives in the light of the changed environment.
- Improvement in Teaching Learning Process: It helps in improving the teaching learning process and makes it more purposive. It tries to discuss the concept of teaching, analysis of teaching process, variables of teaching, phases and levels of teaching, principles of teaching, maxims of teaching and learning.
- Development of Teaching Learning Materials: Teaching learning materials are also as important as anything else in the teaching learning process. In this age of science and technology, the materials of teaching cannot be unscientific. Everything of the society including values of life need be reflected in the materials. Only right type material will be able to modify the behavior of the learner suitably making him a fit person for the society.

- Improvement in Teacher Training: The change of environment with new curriculum and new materials need be handled by the teachers. The teachers equipped with old strategies and methodologies of teaching will remain misfits.

Right type of training to the teachers is the need of the hour. Instructional technology can render its valuable help in the training of teachers also. The use of video tapes and close circuit T.V. will help the teachers to remodel and reshape their teaching behavior suitably.

It includes micro teaching, simulated teaching, team-teaching, teacher effectiveness, modification of teacher-behavior, classroom interaction and interaction analysis, etc.

- Development of Teaching Learning Strategies: A strategies plays an important role in the hands of a teacher in every learning situation. The strategy has to be the right one which should be according to the materials and is able to bring about effective teaching-learning. The different strategies are being evolved by educational technology.

The knowledge of those strategies is a must for every teacher. Then only the teacher will be able to do justice to their jobs.

- Proper Use of Audio Visual Aids: Audio-visual aids always played an important role in the teaching-learning process. They need be used according to the times.

The software aids, the hardware aids, the computer and other such appliances, equipments etc., have to be used in the present type of teaching -learning environment. Computer assisted instructions will help the learner as well as the teacher to achieve the goals of education more conveniently.

- Utilization of the Sub-System of Education: Instructional Technology considers education as a system operating in a systematic and scientific way for the achievement of educational objectives.

For the coverage of its systematic approach, it tries to include the topics dealing with the theory and principles of a system approach, explaining education as a system, its different sub-systems in terms of input and output. It is helpful in solving scientifically educational

administrative problems with the help of system analysis.

- Development of Curriculum: Instructional technology is concerned with the designing of suitable curriculum for the achievement of the desired objectives.

It is helpful in describing the ways and means of the selection of suitable learning experiences, organization of the contents in a suitable framework in order to bring better results. It provides the scientific foundation to education as well as develops theories of teaching and learning.

- Proper Use of Hardware and Software: These day's hardware and software are playing an effective role in the attainment of educational objectives. Instructional technology helps in the proper use of these aids. It tries to describe these resources in terms of their specific functions, their solution, proper handling and maintenance.
- Provide Feedback: It provides an appropriate feedback to the learners as well as teachers for bringing necessary improvement at the preparatory and implementation stages of their specific acts.

For this purpose, instructional technology discusses the ways and means of suitable evaluation techniques, their planning, development selection and appropriate use in relation to the objectives of teaching-learning system.

In this way Instructional Technology is concerned with all those who are concerned in any way, directly or indirectly, to the processes and product of education

It teaches the teachers the art of teaching, the learners the science of teach the educational planners the structure of planning and administrators or managers the skill of managing or administering the task of teaching and learning.

It works for the individualization of instructions as well as for improving the group dynamics of the class-room.

Therefore, in this way the scope of the instructional technology should not be confined to the limited boundaries, but it should be left free for the necessary expansion and development for carrying out its mission,

tasks and objectives.



CHECK YOUR PROGRESS

Q 1: The term instructional technology came into being in the late_____ (Fill in the blanks)

Q 2: Who is the first proponent of Instructional Technology?

.....

Q 3: Define Instructional Technology.

.....

Q 4: Write three assumption of instructional technology.

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3.5 MAIN FEATURES OF INSTRUCTIONAL TECHNOLOGY

- The cognitive objectives can be achieved effectively by the use of instructional technology.
- The learner gets an opportunity to learn according to his own pace. Thus, the individual differences are controlled in this technology.
- The right responses of the students are confirmed for providing the reinforcement continuously.
- The instructional technology incorporates the psychology learning theories and principles.
- The learning external conditions, contiguity practice and reinforcement are created with the help of instruction.
- The instructional theory may be developed by using this technology in learning process.
- The instructional technology can be employed in shortage of effective teachers.
- It provides the deep insight into the content structure and sequence of its elements.

3.6 ADVANTAGES OF INSTRUCTIONAL TECHNOLOGY

The advantages of instructional technology are as follows:

- Makes the instruction more interesting.
- Delivery of instruction is more standardized.
- Learning becomes more interactive by applying accepted learning techniques.
- Quantity of learning is improved.
- Instruction can be provided as and when required.
- Help in development of positive attitude of students towards learning and to the learning process itself.
- The role of instruction can be appreciably changed in positive direction.



CHECK YOUR PROGRESS

Q 5: Write three main features of instructional technology.

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Q 6: The _____ may be developed by using this technology in learning process. (Fill in the blanks)

Q 7: Write four advantages of Instructional Technology.

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3.7 AIMS AND OBJECTIVES OF INSTRUCTIONAL TECHNOLOGY

Instructional Technology is to create engaging, effective learning experiences that cater to the needs of different individuals. It is the precise procedure of outlining, creating, assessing and dealing with the whole instructional procedure to guarantee successful and proficient learning. Below are the aims and objectives of Instructional technology:

- Analyze learner and organizational needs.
- Determine instructional goals and objectives
- Construct a method for evaluating learner achievement.
- Design and select instructional strategies.
- Implement the training.
- Evaluate the training.

In simpler words, it is the method or style of delivering information to a student or audience. To determine the effectiveness of the delivery process, the delivery technique and audience are closely monitored. This feedback data then gives the course designers a way to measure the effectiveness of the process and a chance to improve upon it.

3.8 EDUCATIONAL TECHNOLOGY AND INSTRUCTIONAL TECHNOLOGY

Education is a fairly comprehensive process and imparting of instruction is one of the sub-processes of achieving the goals and objectives of education. Accordingly, technology of instruction may be regarded as one of the parts and sections of the entire phenomenon relating to the technology of education. Strictly speaking, instructional technology is only concerned with determining and providing the appropriate stimuli to the learner to produce certain types of responses for making learning more effective. Educational technology is concerned with the application of system approach to the study of the multi-dimensional problems of education like educational planning and organization, psychology of learning, curriculum development and course design, production of teaching-learning material, use of audio-visual methods, dissemination of information, storage and retrieval, allocation and management of human and non-human material resources, cost effectiveness of media in education and evaluation.

Educational technology provides general support to the teacher, whereas instructional technology conveys a definite part of the curriculum to the students at regular intervals.

Educational technology refers to projects that are large-scale and

involve long periods of time. Instructional technology, on the other hand, is concerned with short-term projects that are on a much smaller scale.

DIFFERENCE BETWEEN EDUCATIONAL TECHNOLOGY AND INSTRUCTIONAL TECHNOLOGY

Educational Technology	Instructional Technology
1. It has a wider concept, including instructional technology. 2. Goals are decided in the context of the needs of a nation. 3. Behavioral outcomes are determined keeping in view the ultimate needs of a nation. 4. Attempts are made to discover competencies and skills of learners all over the nation. 5. Selection of educational media is made for making teaching-learning more effective in several schools of a region. 6. Teaching material is produced on a large scale. 7. Feedback is obtained at national level.	1. It is a part of educational technology. 2. Goals are determined in the context of local needs. 3. Behavioral outcomes are determined keeping in view the specific expectations of the learners. 4. Competencies and skills of the learners of a locality are discovered. 5. A given class or school is the unit for the selection of educational media for making teaching-learning more effective. 6. Limited material is produced according to local needs. 7. Feedback is obtained at local level.



ACTIVITY 3.1

1. Analyze the above table and justify which technology you will use in your classroom.
2. Illustrate how instructional technology is used as a classroom tool to improve upon the course curriculum.



3.9 LET US SUM UP

- Instructional technology has come to our help in enhancing the learning opportunities and systematizing the instructional process for greater efficiency in teaching as well as learning. Instructional technology to reach large numbers in remote and inaccessible areas, remove disparity in educational facilities to the disadvantaged and provide individualized instruction to learners conveniently suited to

their needs and pace of learning.

- The term instructional technology came into being in the late 1960s and James D. Finn Professor at the University of California is considered to be proponent of this term.
- In a strict sense, instructional technology is concerned with determining and providing appropriate stimuli to the learner to produce certain types of responses for making learning more effective. Instructional technology means a net work of techniques or devices employed to accomplish certain defined set of learning objectives.
- The extension programmes can be improved if they are planned and produced based on the principles of instructional technology by invoking appropriate media and including some means of feedback.
- Strictly speaking, instructional technology is only concerned with determining and providing the appropriate stimuli to the learner to produce certain types of responses for making learning more effective. Educational technology is concerned with the application of system approach to the study of the multi-dimensional problems of education like educational planning and organization, psychology of learning, curriculum development and course design, production of teaching-learning material, use of audio-visual methods, dissemination of information, storage and retrieval, allocation and management of human and non-human material resources, cost effectiveness of media in education and evaluation.



3.10 FURTHER READING

1) Aggarwal, J.C. 2009. Essentials of Educational Technology. New Delhi: Vikas Publishing House
2) Kocher, S.K.1985.Methods and Techniques of Teaching. New Delhi: Sterling Publishers
3) Mangal, S.K. 2001. Foundation of Educational Technology. Ludhiana: Tendon Publications.

4) Sampath, K., A. Panneerselvam, S. Santhanam. 2007 Introduction to Educational Technology. New Delhi: Sterling Publishers.
5) Sharma, K.K. 2007. Educational Technology. Delhi: Mahavir and Sons Publishers and Distributors.
6) Sharma, R.A. 2002. Technology of Teaching. Meerut: International Publishing House.]

3.10 ANSWER TO CHECK YOUR PROGRESS

Ans to Q No 1: 1960s

Ans to Q No 2: and James D. Finn Professor at the University of California is considered to be proponent of this term.

Ans to Q No 3: E.E. Haden opined, 'Instructional technology is that branch of educational theory and practice, concerned primarily with design and use of messages which control the learning process.'

Ans to Q No 4: The instructional technology involves the following three assumptions:

- The content matter can be divided into its elements and each element can be presented independently.
- The external learning conditions can be created by arranging the elements in a logical sequence.
- The appropriate reinforcement can be provided continuously by the use of instruction.

Ans to Q No 5: The three main features of Instructional Technology are as follows:

- The cognitive objectives can be achieved effectively by the use of instructional technology.
- The learner gets an opportunity to learn according to his own pace. Thus, the individual differences are controlled in this technology.
- The right responses of the students are confirmed for providing the reinforcement continuously.

Ans to Q No 6: Instructional theory

Ans to Q No 7: The four advantages of instructional technology are as

follows:

- Makes the instruction more interesting.
- Delivery of instruction is more standardized.
- Learning becomes more interactive by applying accepted learning techniques.
- Quantity of learning is improved



3.11 POSSIBLE QUESTIONS

Short Questions (Answer each question in around 150 words).

Q 1: Define the concept of Instructional Technology.

Q 2: What are the assumptions of Instructional Technology.

Q 3: Mention the main features of Instructional Technology.

Q 4: Describe the advantages of Instructional Technology.

Long Questions. (Answer each question in around 300-500 words)

Q 1: What is Instructional Technology? Write the aims of Instructional Technology.

Q 2: Discuss the nature and scope of Instructional Technology.

Q 3: Differentiate between educational technology and instructional technology.

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