EDUCATIONAL TECHNOLOGY – A BLESSING IN THE FIELD OF EDUCATION

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INTRODUCTION- We all know that some teachers teach better by utilising new methods and techniques. Some other teachers teach with some age old methods without looking back whether their teaching is effective. Over the years, teachers and researchers have developed and used many techniques, methods and equipments to make the process of learning effective. This process of developing and using scientific methods, media and techniques for raising the effectiveness of teaching and learning is essential for educational technology.

MEANING OF EDUCATIONAL TECHNOLOGY-

EDUCATION- Education is not only external arrangement by a trainer e.g. training of a dog, it is a process of changing human behaviour in the desirable direction or helping an individual to bring out(educe) his/her best potential;

TECHNOLOGY- It is a systemic study of techniques, and methods applied to achieve an objective. We may also say that branch of knowledge that deals with industrial arts, applied science, engineering, etc.

Combining the two we may try to derive the meaning of "EDUCATIONAL TECHNOLOGY" . Before doing that we will try to review some of the definitions given by experts:

THE NATIONAL COUNCIL OF EDUCATIONAL TECHNOLOGY (1967) has defined Educational Technology as " The development, application and evaluation of systems, techniques and aids to improve the process of human learning". Therefore, Educational

Technology means not only the hardware or machines, but also all those processes which help in human learning.

Unwin (1969) has also defined Educational Technology as "The application of modern skills and techniques to the requirements of education and training. This includes the facilitation of learning by manipulation of media and methods, and the control of environment so far as this reflects on learning". An analysis of this definition pointed out that Educational Technology is :

1) An application of modern skills and techniques in view of the objectives.
2) Facilitation of learning by methods and media.
3) Control of environment for effective learning.

CHARACTERISTICS OF EDUCATIONAL TECHNOLOGY-

1) It includes input, process and output aspects of education.
2) It stresses upon developing methods and techniques for effective learning.
3) It is an application of scientific knowledge of education and training.
4) It includes organisation of learning conditions for realising the goals of education.
5) It emphasises designing and measuring instruments for testing learning out comes.
6) It facilitates learning by controlling environment, media and methods.

TECHNOLOGY OF EDUCATION-

Technology of education deals with the active use of all the systematic application of the resources of scientific knowledge of the process of learning that each individual has to pass through in order to acquire and use knowledge. It also includes decisions about the educational objectives to be achieved and decisions about the size of the learning groups, learning sequence, knowledge, ideas and resources in the systematic planning,

designing, production, management and evaluation of the educational process.

TECHNOLOGY IN EDUCATION-

Technology in Education refers to the use of technological hardware in education. It is mainly concerned with electrical and electronic gadgets which are used to facilitate the teaching-learning process. Saettler (1978) distinguishes between technology of education and technology in education. According to Him, the former is a behavioural science conception where as the latter is a machine conception of educational technology. Radio, Television, OHP, Computer, Tape recorder, etc., constitute technology in education, where as the Radio programmes, computer programmes, OHP transparencies which are based on scientific knowledge of education constitute technology of education.

SCOPE OF EDUCATIONAL TECHNOLOGY-

Educational Technology as we know it used to raise the efficiency of education. But with the passage of time , the system of education is facing new problems to be tackled. So, the hardware and software of educational technology are ever expanding. Therefore , the application of educational technology is much more than what it was a few decades back. Following are some of the applications of educational technology that are worth noting.

1) MASS EDUCATION- There has been explosion of population and knowledge. There is, therefore, a need to educate the masses. The problem is multiplied further by having a large section of illiterate people. So, educational technology has a tremendous application to educate a large section of people and to input a large amount of knowledge in a limited span of time.

2) HISTORICAL INFORMATION- Any branch of knowledge that we deal with has a historoical base. Such information is of tremendous importance for the student to understand any branch branch of knowledge in its totality. Such incidents when occur can be

recorded with the help of audio-video cassette or documented in the form of a written or printed material.

3) COSTLY AND HAZARDOUS EXPERIMENTS- In many field of science and technology there are some experiments having great implications for effective learning which are not advisable for the teacher to conduct in the classroom because of cost and health hazards involved. Such experiments , once conducted carefully in the laboratory or elsewhere can be recorded with the help of new electronic technology and be used by teachers and students for effective learning.

4) GAMING AND SIMULATIONS- If Historical events which are either costly or hazardous which can not be conducted, the educational technology can rescue us by doing the same through simulations. Computer technology in this regard plays a main role. This can provide a lifelike picture of phenomena in three dimentions. It can also show that the operation of different parts of a phenomenon and the consequences.

5) DISTANCE EDUCATION- Educational technology has great scope in distance education and open school programme. Today there is a great need for personnel training and education on regular basis for updating oneself in the field of work.

6) COLLECTION, STORING, AND RETRIEVAL OF INFORMATION There are certain cameras which provide us the facility to take same photographs of events that take place in a fraction of second, events that occur at a far of place, those that cannot be seen by the naked eye. There are also satellites that work for us day and night to provide us information about places which are not accessible to us. Information can be collected with the help of this new electronic technology both in audio and in video form. Such information can be stored with magnetic and electronic devices easily and can be retrieved within no time.

7) RESEARCH – Not only quantitative data but also qualitative data can be analysed and there lies the role of computer and the

different methods of data analysis methods and techniques. More over, in developmental type of research, different kinds of packages can be developed for raising the effectiveness of learning.

EVOLUTION OF EDUCATIONAL TECHONLOGY

Human beings have the potential to create. This potential has enabled the people to solve problems and learn from their experiences. The Ancient man learned to roll logs of wood, tried to communicate through verbal and non-verbal ways, evolved language and gradually then written and printed materials were developed. Later on, the technology of software based on psychology and sociology came into being. Now, we have mass learning, group learning, and individual learning in operation. In all these new ventures we have used many technologies. These technologies have evolved through the past decades of the nineteenth century. They can be placed in four phases as follows:

1)AUDIO- VISUAL PHASE

2) CYBERNETIC PHASE

3) PSYCHOLOGY-SOCIOLOGY BASED PHASE AND

4) COMPUTER AND TELECOMMUNICATION PHASE.

1) AUDIO –VISUAL PHASE- Before the 1950s the term audio visual education was used. There were various teaching aids like blackboard, maps, radio, films, etc. These were mainly media through which a teacher presented his/her messages. The materials developed were not systematically based on any psychological principles. Education was viewed primarily as a process of transmitting by a teacher, the messages which he/she considered important, to students. In this transmission he/ she used aids which highlighted the messages. In a sense, the tradition started with printing technology—books, maps, charts, etc. Although a good teacher in his/her transactions with students, asked them questions, etc .and encouraged interaction with them, aids like books, radio or film were primarily non- interactive. This can be represented by the following figure:

Media

Book

Teacher ⟶   Radio   ⟶ Students

Film

One – way communication

2) CYBERNETIC PHASE—While steering a ship, the sailor needs to know in which direction his boat is sailing, how far the boat is from the either bank of the river/ sea etc. In other words, he needs information about the process in relation to the goal to be achieved—the end result to be obtained. This requires "FEEDBACK". The cybernetics tradition which lays emphasis on feedback is traced back to the Second World War where there was a need for a systematic communication and control system. Cybernatics has been defined as the comparative study of the human control mechanism and electro- mechanical control systems such as computers. The word Kybernetes in Greek, means "Steersman", which emphasises the principle of feedback control. The feedback refers to a kind of reciprocal interaction between two or more events in which one activity generates a secondary action which, in turn redirects the primary action. The feed back system has three functions:

a) It generates movement of the system towards a target or in a defined path.

b) It compares the effect of this action with the true path and detects error, and

c) It utilises error signal to redirect the system.

A simple form of cybernetic model is presented below:
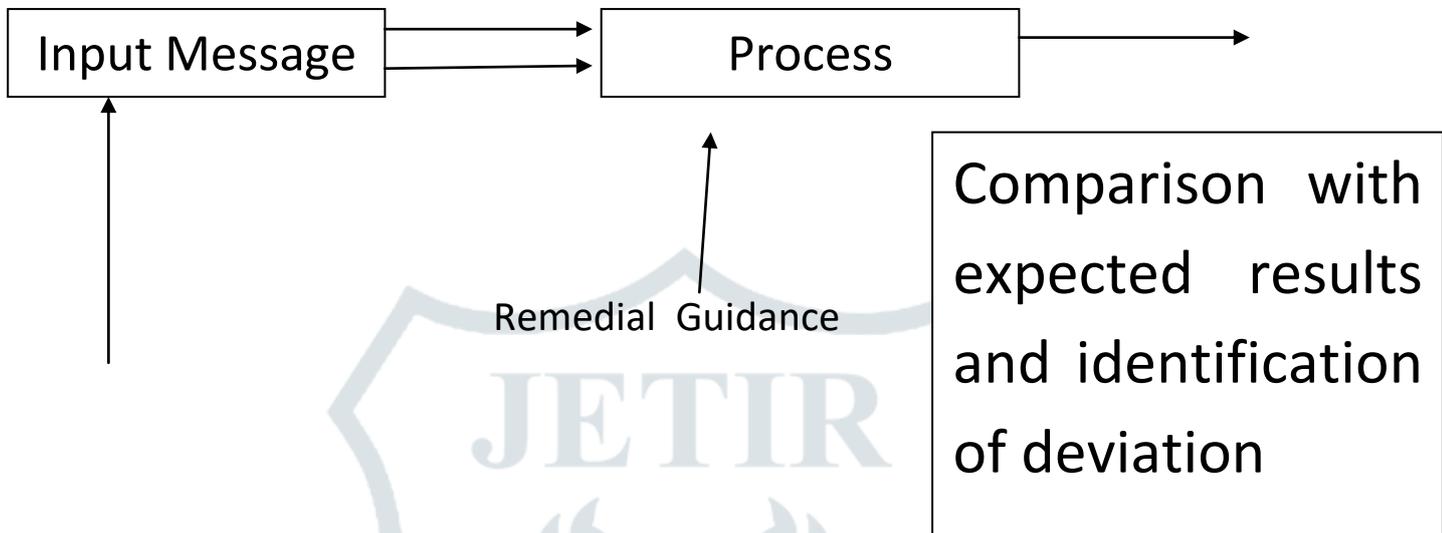
Cybernetic Model

CYBERNETIC PRINCIPLES HAVE SOME IMPLICATIONS FOR LEARNING-

a) The activity involved is geared to the learner's stage of growth—physical and cognitive.

b) The learner is given an opportunity to perceive meaningful relationships among the elements of the goal towards which he/she is working.

c) The learner is provided with some criterion for indicating to him/her specifically what progress he/she is making.

d) The learner is presented the activity both in verbal and non-verbal context in varied situations and practice conditions.

3) PSYCHOLOGY-SOCIOLOGY BASED PHASE- This phase has a long history. It can be traced back to the learning theory given by Thorndike in 1913. Based on His theory, Pressey (1926) developed a teaching machine. It provides an automatic scoring device to the learners on immediate

feedback basis. So, this was the first step towards the formulation of systematic learning. Subsequently, the theory of B.F . SKINNER (1953) i.e. operant conditioning and the work of NORMAN A, CROWDER opened new chapters in developing programmed learning materials. Their main contribution was human behaviour can be shaped. The following are the principles of operant conditioning:

1) Immediate reinforcement of student's response.

2) Gradual progression of establish complex repertoires, and

3) Revision or modification of the programme to fit the students.

4) COMPUTER AND TELECOMMUNICATION PHASE—In the last decade, the World has been deluged with software technology which has been also used amply for education and training. Multimedia, E-mail, internet, intranet and website are used extensively today. There are Telecommunication modes through which instructional materials can be given to students. There are many computer software packages developed for school children in many of the school subjects. These packages also have been used and proved to be effective in terms of time and level of students achievements. There are also several organisations established in different parts of the world for the development of software packages. For example, In India we have Audio-Visual Research centres, Educational media Research centres and different departments of education and educational technology which have been developing software packages for the education of children. Many Audio- Visual programmes are also telecast by Delhi Doordarshan for school children.

CONCLUSION—In the above mentioned discussion we are able to know that Educational Technology is a science of techniques and methods by which educational goals can be realized. Educational technology, as we have know has two aspects that is hardware and

software. Hardware technology is based on the principles of engineering and software technology is based on the principles of social sciences. In our educational system, there is a wide scope for educational technology that is to educate the masses, store historical information, collect large amount of information, use as alternative to hazardous, costly, or non-feasible experiments by simulation. It also provides us the facility of distance education methodology and research by manipulating large amounts of data.

REFERENCES—

1) Hilgard E. R and Richey H.G (ed.) (1964): Theories of learning and Instruction, National Society for study of Education, Chicago.

2) Mohanty J., (1992): Educational Technology and Communication Media , Nalanda ,Cuttack.

3) Philips J. S and Rock Well D. M,(ed.) (1976): Instructional media and Technology: A professional Resource, Dowden, Hutchinson and Ross Inc, USA.

4) Mukhopadhyay M. (ed) (1990) : Educatiponal Technology: Challenging Issues, Sterling Publishers, New Delhi.