Chapter 2

Educational Technology

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EDUCATIONAL TECHNOLOGY

2.1 EDUCATIONAL TECHNOLOGY:

Educational Technology is a new branch of knowledge that has been vastly influencing the field of education in the present century. The present one is rightly called the Technology century due to the influence of advancements in the fields of Science and Technology on the varied aspects of life, resulting in its modernization.

The impact of Scientific and Technological advancements on Education is so great that it has given rise to a new discipline called Educational Technology.

Today's classroom practices are quite different from those of yesterday. Similarly the classroom practices in the coming century may be quiet different from those of today. One can easily find out the explanation for these differences in the obvious impact of technological innovations and inventions.

To gear the Teacher-education programs to the needs of the society in the coming century, he prospective teachers should be trained to develop futurological prospective by planning their training programs accordingly.

Educational Technology, considering its growing importance, may become in the near future a compulsory subject in the generalized curricula of Professional Preparation of Teachers and each of the College of Education and Teacher Training Institute in the country, may have to get equipped fully with the material and man-power requirements.

2.2 HISTORICAL DEVELOPMENT OF EDUCATIONAL TECHNOLOGY:

Initially Plato the great Philosophist thinks over to explain any concept how to use aids instead of using only words. Then also up to fifteenth century in Western countries also word media for instruction was mainly used. At the end of fifteenth century, Audio-visual aids were firstly used by Rabelies

because he understood the use of picture easier the process of learning. Irasms also supports this idea and admits the need of practical visual study. Vitorino the Feltre used elephant picture first time in teaching.

The great Philosophist Komenius prepared first pictorial book named as 'Orbis Pictus'. In this book there were 150 lessons, each lesson have a picture. He suggested use of pictures in teaching is very urgent.

In 1792, Roussaue, Pestology and Probel also support use of pictures in books. In 1894, Edison discovered motion-picture and think over to use motion pictures in education. At that time he said, "Education is given by using motion-picture media in future and it is also a type of visual education."

At the time of Second World War soldiers were trained by using motion pictures. After the Second World War each field is suffered by revolution. Education field is also suffered by revolution. Educationalist also starts to think how to use Radio, Television, Motion pictures etc. in education. This is the starting of Educational Technology concept in education.

2.3 EDUCATIONAL TECHNOLOGY: MEANING

The phrase Educational Technology is derived from Education and Technology respectively. Education is said to be derived from educare, educere and educo. Educare means to bring up; Educere means to bring forth and educo means to lead out of. By education we mean helping a child to draw the best out of him. Education may be taken to mean development of the required abilities, skills, competencies and attitudes in the younger generation to enable them live successfully in the modern scientific and technological society.

Technology may be defined more precisely in the following terms:

"It is the branch of knowledge which deals with industrial arts applied sciences, engineering etc. and the application of that knowledge for practical ends in a particular field."

The term technology has been derived from Tec, Techne and Technic. Tec means detective; techne means art and technic means doctrine of arts.

Logos means a word about or science of. In short, technology means science of industrial arts, applied sciences and engineering.

Educational technology may be taken to mean the systematic application of technological knowledge to the field of education towards the attainment of physical goals.

The concept of Educational Technology covers application of modern technological principles to the solution of practical educational problems on the one hand and to the development of electro-mechanical instruments utilizing the modern engineering principles and using them for educational purposes.

There are two definite shades of meaning of Educational Technology.

1) Systematic utilization of technological findings for attaining the practical educational purposes.

2) The development of electromechanical devices – hardware to be used in the educational field is effective improvement in the efficiency of teaching and learning.

National Council of Educational Technology (U.S.A.) defined as, "Educational Technology is the development, application and evaluation of systems techniques and aids to improve the process of human learning."

2.4 OBJECTIVES BEHIND EDUCATIONAL TECHNOLOGY:

Following are the objectives behind Educational Technology subject:

1) Understand the meaning and scope of Educational Technology.

2) Understand, analyze and synthesize the concept of a system approach and its implications for instructional system designing.

3) Understand, analyze and synthesize different components of an instructional system and the steps in designing the same.

4) Acquiring knowledge and develop skill in handling audio-visual aids for an instructional system.

5) Develop skills in preparing low cost support system.

6) Understand and synthesize how to monitor and modify instructional system according to the learning difficulties of pupils.

7) Use different media in classroom communication.

8) Understand, analyze and synthesize the role of teacher as a change agent using Educational Technology.

2.5 CHARACTERISTICS OF EDUCATIONAL TECHNOLOGY:

The following characteristics of Educational Technology will help to understand its nature clearly:

1) It involves adaptation of technological innovations and inventions to educational situations.

2) It attempts at the modernization of the educational system by bringing into use varied electro-mechanical devices.

3) It facilitates undertaking mass educational programs successfully utilizing mass communication media.

4) It helps to give up traditional and conservative methods giving way to adoption of scientific and technological methods of instruction.

5) It enables teachers to use multi-sensory teaching learning aids leading to teacher effectiveness and optimum learning.

6) It affords better adjustment to the ever changing technological world of ours.

7) It promotes development of proper technical, technological skills and scientific thinking and attitudes in learning.

2.6 NEED AND IMPORTANCE OF EDUCATIONAL TECHNOLOGY:

The shape of future schools, colleges and universities is bound to change radically due to technological impact in the years to come.

The nature of the changing society is due to the impact of the scientific and technological advancements. The coming society is termed as 'the learning society'. Nobel characteristics of the emerging society may have the following:

1) It offers greater opportunities for an increased consumption due to economic growth.

2) It accelerates the process of change.

3) It may be subjected to greater international exposure by virtue of mass-media, travels and developed educational technology.

4) It may tend towards meritocracy.

5) It may provide increased pluralism as regard life outlooks and values.

Need for gearing education and teacher education due to meet the future requirements of the society utilizing the technological changes.

To gear the Teacher-Education programs to the needs of the society in the coming century, the prospective teacher should be trained to develop futurological perspective by planning their training programs accordingly.

Educational Technology, considering its growing importance, may become in the future a compulsory subject in the generalized curricula of professional preparation of teachers and each of the college of education and Teacher Training Institute in the country. Educational Technology has a great future both in the field of Education and Teacher Education as a subject of specialization in the coming decades.

2.7 REVIEW OF THE RELATED STUDIES:

The present study is concerned with the Development of Multimedia Instructional System on Educational Technology for B.Ed. pupil teachers. The investigator has decided to review the related studies for better planning, designing and developing the multimedia instructional system. The investigator has gone through the following volumes on Educational Research.

1) A Survey of Research in Education, Dr. M. B. Buch (Ed.), CASE, M. S. University, Bardoa, 1974.

2) Second Survey of Research in Education, (1972-78), M. B. Buch (Ed.), Society for Educational Research and Development, Baroda, 1979.

3) Third Survey of Research in Education (1978-1983), Dr. M. B. Buch (Ed.), NCERT, New Delhi, 1987.

4) Fourth Survey of Research in Education, Volume I and II (1983-88), Dr. M.B. Buch (Ed.), NCERT, New Delhi, 1991.

5) Fifth Survey of Educational Research, Volume I (1988-1992), Dr. A. K. Sharma (Ed.), NCERT, New Delhi, Aug. 1997.

The investigator had also gone through different periodicals on education such as Research Bulletin published by M. S. Council of Education, Research and Training Poona, Journal of Indian Education published by N.C.E.R.T., New Delhi, University News published by Association of Indian Universities, Shikshan Sankraman published by Maharashatra State Board of Secondary and Higher Secondary Education, Pune to find out whether they contain any Abstract of research studies in the field.

There is no research work in India, which is directly related to the present study. The partly related studies are as follows:

1) MUDDU V. M.

A Study of Effectiveness of the use of Motion Pictures as Aids in the Teaching of Biological Science as compared to the usual methods, Dept. of Education, Osm. U., 1978.

The main findings of the study are as follows:

1. There was significant improvement in the post-test performance of students in both the groups.

2. Experimental group improvement is more.

3. Definite improvement in the pass percentage in case of experimental group.

4. The use of films in teaching of biological sciences helped in more learning in lesser time and better retention.

5. Instructional films stimulated the scientific interest of the students.

2) BASU M. K.

Effectiveness of Multimedia Programmed Materials in the Teaching of Physics, Ph.D. Edu. Kal. U., 1981.

The following were the findings of the study.

1. There was a significant difference among the different strategy means on the criterion on overall achievements.

2. The strategies of multimedia programmed instruction enabled learners to reach the level of mastery learning.

3. It was found that a significant difference existed in the achievement through the different strategies due to differences in ability.

3) KUMAR A.

An Experimental study of the Relative Effectiveness of Three methods of Instruction - Exposition Method, Programmed Learning Method and Multimedia Method in Science Education, Ph.D. Edu., Kur. U., 1981.

The major findings of the study were:

1. The multimedia method was more effective than either the programmed learning method or the Exposition method.

2. The programmed learning method was more effective than the Exposition method.

3. Retention in learning by the Multimedia Method was higher than by the other two methods.

4. Retention in learning by the PLM and Exposition method was equal.

5. There was no interaction between the three methods of instruction and the levels of intelligence.

4) VARDHINI V. P.

Development of a Multimedia Instructional Strategy for Teaching Science (Physics and Chemistry) at Secondary Level, Ph.D., Edu., MSU, 1983.

The major findings of the study were:

1. Almost all the units indicated average/high level of performances on the total test.

2. The strategy was found valid against the criterion of scientific attitude in that significantly higher performance was noted for the group in the post test over the pre test.

3. Validity of the strategy was established from reactions expressed by students for its continuance and also their improvement in science achievement.

4. Intelligence and achievement using the strategy presented a significant relationship.

5. A significant relationship was found between scientific attitude and achievement for the experimental group and control group.

6. Visual projections with teacher explanation and those with taped commentary were equally effective in terms of achievement.

7. Programmed materials and discussion sequence were equally effective on the total test.

8. The strategy was found feasible when seen in terms of reproducibility and the cost management by individual schools.

5) BARVE M. V.

Preparation field and Testing of Filmstrip for the Teaching of Science – A course in std. IX and a study of their comparable effectiveness in the Teaching-Learning Process as compared to the Traditional Practice., Ph.D., Edu. SNDT, 1986.

The main findings were as follows:

1. Filmstrip was more effective than the traditional method for teaching the facts, principles and concept in science.

2. Filmstrip and the traditional methods were equally effective for teaching abstract concepts in science.

3. Filmstrip was an effective teaching aid for all levels of learners, i.e. low, medium and high achievers.

4. Filmstrip was more effective for the learners between 13 to16 years of age than for learners between 17 to 21 years of age.

5. Filmstrip was a more effective method of teaching science for both sexes i.e. males and females.

But, all these studies does not include computer assisted instruction.