Original Research Paper

Commerce

INFORMATION AND COMMUNICATION TECHNOLOGY IN TEACHING, LEARNING AND EVALUATION.

D. P. Patil   KKW Arts, Science and Commerce College, Pimpalgaon B

ABSTRACT   Information and communication technology have affected every aspect of human activity and have a potential role to play in the field of teaching, learning and evaluation. The purpose of this paper is to review the uses of ICT on curriculum in education, particularly in teaching and learning as well as evaluation process. In this paper we shall try to find the answers of the following questions:
(1) What are different applications of ICT in teaching, learning and evaluation process in general and particularly in mathematics education?
(2) What are the effects of these applications?

INTRODUCTION

Gurukul system was very famous in early days of education in India.

Some of the main features of this system are as follows;
(1) Teachers were dedicated and knowledgeable.
(2) Teaching was individualized and learner centric.
(3) Students were self motivated and eager to learn.
(4) Students live with teacher for whole learning period.
(5) Number of students in each gurukul was limited.

As the number of students increase in India gurukul system is changed. Because of increase in number of students, it becomes difficult to gurukul for accommodating every learner. Hence schools are opened where it is necessary. Then number of teachers also increased. To teach the student a lecture method is adopted. Teachers have been conscious about the quality of his teaching. Hence to increase the quality of teaching some teachers use teaching aids like charts, models, specimens, slides etc., because teachers are given both in preparing and using audio visual aids during teaching. The text books were written in the old format and hence these were not beneficial for teachers and learners to enhance the quality of teaching and learning. Researchers started thinking and using different methods of learning. This gives birth to program Learning Material. These materials were compared with that of lecture method or Conventional method. In terms of achievement of students programmed learning material in combination with other methods for teaching was found to be very effective. See, Patel (1977), Shah (1980), Inamdar (1981), Joshi (1988), Pandit (2003), and Kaur (2005). Now a day's these efforts could not improve the teaching quality to the satisfaction of teachers, students, and other stakeholders. In this article we see the most effective tools to be used by teachers for good quality of teaching and learning. Davis and Tearle (1999) stated that ICTs have the potential to innovate, accelerate, enrich and deepen skills, to motivate and engage students, to help relate school experience to work practice, create economic viability for workers in future, as well as strengthening teaching and helping school change. Hepp et al claim in their paper that ICTs have been utilized in education ever since their inception, but they have not always been massively present.

The 1990s was the decade of computer communications and information access, particularly with the popularity and accessibility of internet based services such as electronic mail and World Wide Web (WWW). At the same time CD-ROM became the standard for distributing packaged software. CD-ROM replaced the floppy disc. As a result educators became more focused on the use of technology to improve student learning. Any discussion about the use of computer systems in school is built on an understanding of the link between schools, learning and computer technology. In a sense it was considered that the computer would take over the teacher's job in the same way as a Robot computer may take over a welder's job.

According to Daniels (2002) ICTs have become one of the basic building blocks of modern society, within a very short interval of time. There appears to be misconception that ICTs generally refers to computers and computing related activities. This is fortunately not the case, although computers and their applications play a significant role in modern information management, other technologies. Pelgrum and Law (2003) state that around 1980S the term 'computers' was replaced by Information Technology(IT) signifying a shift of focus from computing technology to the capacity to store and retrieve information. After this the term ICT (Information and communication Technology was introduced around 1992, when e-mail started to become available to the general public. However use of Information and Communication Technology in the education process has been divided in to two broad categories: ICTs for education and ICTs in education. ICTs for education refer to the development of information and communication technology specifically for teaching, learning process. ICTs in education involve the adoption of general components of information and communication technologies in the learning process.

Information and communication technologies (ICTs) are a diverse set of technological tools and resources used for creating, storing, managing and communicating information. For educational purposes, ICTs can be used to support teaching and learning as well as research activities including collaborative learning and inquiring. One of the main applications of the ICTs in higher education is teaching and learning based on these new technologies.

Among the first studies on the comparison of the traditional and modern ways with the help of educational technologies research was Clark Richard (Clark R 1983). He tried to compare research between lectures and computer guidance and instruction to determine which the better way of learning is. He came to the conclusion that they are both effective depending on the ways they are used. The same conclusion came by other authors (Dynarski et al. 2007; Kulik 2003)and that is that there are some major differences in the use of educational technology and traditional teaching.

Education in India: In India education has to confront with three major challenges. One relates with quality, second with quantity and third relates with the universal access. These challenges exists at all levels i.e. Pre-school, Primary school, secondary and higher secondary school and higher education. It is clear that the education must be holistic learning experience which facilitates comprehension and understanding of things around the student, acquisition of procedural knowledge which is to be a professional in chosen area as well as related training and skills. Further inculcation of values and sensitivity towards people and nurture around us and an attitude of sharing each other's Joy as well as sorrow should be an integral part of learning process.

ICT: Together with other teaching aids teachers started using ICT. The latest technology ICT can be used in following areas.

(1) Teaching (2) Evaluation (3) Remedial teaching (4) Diagnostic testing (5) Development of virtual laboratory (6) Online tutoring (7) Material development, etc.

ICT become popular among teachers because along with giving information the other objectives are as follows.

(1)   Developing understanding and application of the concept.
(2)   Developing expression power.
(3)   Developing reasoning and thinking power.
(4)   Development of judgment and decision making ability.
(5)   Developing self concept and value clarification.
(6)   Developing proper study habits.

About teaching and learning mathematics Benson (1989) conclude that, the traditional method of teaching was found to be more effective in comparison to computer Assisted Instructions.
Students use information technologies to:

• Participate in media revolution
• Improve the ways of learning in new learning fashions.
• Working in groups for collaborative and cooperative learning.
• Developing self learning habits at their own pace and time.
• Develop inquiry habits
• Review and explore qualitative data.
• Extend the ability and skills of applying their learning in real situation.
• Learn with the teacher.
• Learn right information at right time to achieve right objective.
• Exchange learning experiences and learning information with others living anyehere in the world.

Thus information technology helps students in their learning process through their active participation on one hand and help teachers on other hand

Teachers use information technologies to:
• Present the material in more interesting and attractive ways.
• Make best use of time.
• Provide individualized instructions.
• Solve the problems arising in study of students.
• Direct the students towards cooperative as well as collaborative learning activities.
• Guide and help students in searching the qualitative material.
• Coach the students.

Diagnose the learning problem of the students and help them to solve it.

• Prepare learning material for students, rather teaching in conventional situation.

Information technology affects the teaching learning process in different ways. It helps the teachers in preparing lecture notes for interesting presentation and also facilitates the student. Thus it is useful for both teachers and students. Students learn by interactive technologies and teacher facilitates them on how to use and reflect responses. When student work with information technology, teacher reduces the time of directing students, they spend more of their time for facilitating student learning.

ICT increases the flexibility of delivery of education so that learners can access knowledge anytime and from anywhere. It can influence the way students are taught and how they learn as now the process are learner driven and not by teachers. This in turn would better prepare the learners for lifelong learning as well as to improve the quality of learning. One of the most vital contributions of ICT in the field of education is – Essay access to learning. With the help of ICT students can now browse through e-books, sample examination papers, previous year papers, etc. and can also have an easy access resource persons, Researchers professionals and peers all over the world.

Use of computer
The computer is an electronic device based on digital technology that has capacity to store, retrieve and process qualitative as well as quantitative information very fast and accurate. Researchers started using computers for teaching purpose, which gave birth to Computer Assisted Instruction (CAI), Computer Managed Instruction (CMI), Computer Based Instruction (CBI), etc. It is known that developed CAIs were superior to lecture method or traditional method in teaching. The model of supplemental was found to be effective for student's achievement in mathematics. Further use of   software improved achievement in learning calculus and graphs. The use of computer is not only for teaching but for testing, evaluation, library management, etc. Yusuf (2005) said that the field of education has been affected by ICTs, which have undoubtedly affected teaching, learning and research.

Information and Communication Technology
Information Technology is a term used to cover technologies used in the collection, processing and transmission of information which includes micro-electronics and info-electronics based technologies incorporated in many products and production processes. It also covers inter alias computers, electronic office equipments, telecommunication, computer controlled machine, electronic components and software products.

IT can be also defined as use of hardware and software for efficient management of information, i.e. storage, retrieval, processing, communication, diffusion and sharing of information for social, economical and cultural up-lift-ment. Students are made independent in their studies by the use of information and communication technology in teaching and learning. Using these technology students can decide about their studies, learning time, place and the resources in the better way. Students can work in more supportive environment with the help of teachers or fellows and share their experiences and ideas in productive fashion. Rashid (2001) stated that

• Both teachers and students can work with others at remote sites.
• The community of learners can expand to include virtually any one who wishes to obtain information and who is not excluded by policy or cost.

Digital learning resources:
Digital learning resources helps students to develop mental representation through the mix of media elements presented to them and thus support the information processing. These resources contain content and learning activities. They contain multimedia elements like text, images, video and audio to present information. Student's attention and engagement with these resources helps them to process the information in to working memory. When students interact with the multimedia information, they encode the information in to long term memory.

Principles of effectively designed digital learning resources are as follows,
1.   To exclude the information and activities that directly related to the topic.
2.   To focus on information and activities those are directly related to the topic.
3.   Clearly identify the complexity of learning material and experience of student.

Teachers use digital resources for lot of purposes and in many ways including following ways,

1.   To introduce the student a specific topic.
2.   To stimulate the group for discussion.
3.   To provide students with access to different text types.
4.   To engage the students in different activities, those are not possible in the classroom.

5. To encourage the students to work at their own pace as a review or extension activities.
6. As a part of teacher's lecture or demonstration.
7. To improve the student's knowledge in the topic.
8. To increase the thinking ability of the student.

Using technology for communication:

A child is not a born user of digital technology, but can learn. He can learn technology from his parent, a friend, a teacher or through a program. Students are seeing, using, and trying media in all aspects of their lives outside of the school. Teachers can help students to draw links between what is happening outside the school and what is happening inside the school. Teachers can use technology within the classroom to model real world practices. Communication skills are identified through the curriculum. Educational theories help teachers to understand how student learn to make meaning through communications. Teacher can set journal writing, speech writing, preparing topic notes / talks, newsletters, debates, group discussions and interactions as communication learning activities and many more. Technology can be embedded meaningfully and engagingly in to these activities. Word processing, presentation and publishing software, webpage authoring tools, email, twitter, whatsapp, and online discussion are included in communication tools.

REFERENCES

1 Benson C. I.: Effect of computer instruction in finite mathematics on student's achievement and attitude, Dissertation abstract International Vol. 50, No 9, 1989.
2 Clark R. E. (1983) Reconsidering the on learning from media, Review of Educational Research, 53(4) , 442b- 459.
3. Daniels J. S. (2002) "Foreword" in Information and Communication Technology in Education- A curriculum for schools and programme for Teacher Development. Paris: UNESCO.
4. Davis N. E. and Tearle P. (Eds.) (1999) A core curriculum for telematics in teacher training. Available www.ex.ac.uk/telematics.T3/corecurr/tteach98.htm.
5. Dynarski M. , Agodini R. , Heaviside S. , Novak T., Carey N., Campuzano L., Means B., Murphy R., Penuel W., Javitz H., Emery D., and Sussex W. (2007) Effectiveness reading and mathematics software products; Findings from the first student cohort, Washington, DC. Institute of Education Sciences.
6. Inamdar J. A.: A study of the Effectiveness of the programmed learning Strategy in the Subject of Mathematics for standard VII in relation to some psychological correlates. Ph. D. (Edu.), Sardar Patel University, 1988.
4. Joshi M. : A study of the effect of test anxiety and intelligence on the performance of high school students in a segment of science , following programmed introduction in linear and branching styles, Ph.D. (Edu.), Himachal Pradesh University, 1988.
5. Kaur M.: Evaluation of the learning materials prepared for Neo literates in the regional resource center, Chandigarh. Ph. D. (Edu.), Punjab University, 2005.
6. Kulik J.A. (2003) : Effects of using instructional technology in elementary and secondary schools, what controlled evaluation studies say SRI project number P 10446001 Arington. VA SRI international
6. Pandit K. A.: Development of learning method and Instructional material to Nourish the language ability of multilevel class. Ph.D. (Edu.), SNDT Women's University, 2003.
7. Patel A. D.: Development and tryout of Auto Instructional programs in units of Geometry for class VIII and to study its effectiveness in the context of different variables, Ph.D. (Edu.), Sardar Patel University, 1977.
8. Pelgrum W. J., Law N. (2003) "ICT in Education around the world: Trends, Problems and Prospectus" UNESCO- International Institute for Educational planning. Available www.worldcatlibraries.org/wcpa/ow/02d077080fcf3210a19afeb4da09e526.html.
9. Shah I. K.: Developing a teaching strategy for the course of educational evaluation at the B. Ed. Level and studying its effectiveness Ph.D. (Edu.), M. S. University of Baroda, 1980.
10. Yusuf M. O. (2005) Information and communication education: Analyzing the Nigerian national policy for information technology. International Education Journal Vol. 6, No. (3), 316-321.