

**KEY-ROLES OF INFORMATION AND COMMUNICATION TECHNOLOGY IN EDUCATION FIELD: NOT TO BE TAKEN AS PANACEA**Voice of Research
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Abstract

Information and Communication Technologies (ICT) have played a paramount role and penetrated in every aspect of human activity and have a vital role to play in the field of education and training, specially, in distance education to transform it into an innovative form of experience. The need of new technologies in teaching learning process grows stronger and faster. The information age becomes an era of knowledge providing sound and unmatched feasibility for discovery, ICT and exploration to strengthen the teaching learning process. ICT help in promoting opportunities of knowledge sharing throughout and all over. Accurate and right information is necessary for Decision making, Effective teaching and learning. Learner is independent and they can make best decisions possible about their studies, learning time, place and resources, in a distance mode learning and teaching. Students are able to work in collaborative and interactive learning environments effectively communicating, sharing information and exchanging ideas and learning experiences in all walks of life. In this paper role of ICT and their application and constraints have been brought in a simple form, so that ICT is not to be taken as panacea, rather modern and useful technology to be used in our advantage.

key words : ICT, ICT and education, panacea

Information Technology is the use of hardware and software for efficient management of information, i.e. storage, retrieval, processing, communication, diffusion and sharing of information for social, economic and cultural upliftment. IT covers technologies used in the collection, processing and transmission of information. In fact, its knowledge can provide sources for knowledge acquisition and storage. IT is changing every aspect of human life including communication, trade, manufacturing, services, culture, entertainment, education, research, national security and global security.

Role of Computer in Information Technology :

Several main styles or paradigms, or models of programming - imperative, functional, logic and object oriented ones - were developed during more than 45 years history of programming. Each of them is based on specific algorithmic abstractions of data, operations, and control and presents a specific mode of thinking about program and its execution. Though modern programming languages usually include programming techniques from different styles, they may be classified according to the main style and techniques supported (e.g., programming language Lisp is a functional language while it includes some imperative programming constructs). Nowadays, for implementation of large programming project, techniques from different paradigms are required, mainly because of complexity and heterogeneity of problems under solution.

Functions : There are numerous functions that a Computer can perform in management functions, if programmed as such financial decision-making, personnel decision-making, material decision-making, marketing decision-making, production decision-making, maintenance decision-making,

educational related decision-making, research methodology decision-making and routine administration starting from attendance through biometric machines to daily profit.

Operation knowledge : Operation knowledge" was launched by the government as part of the "Information Technology Action Plan" under which computer and Internet facility was to be made available in every school, college and university for providing quality education by 2008.

Role of IT in Education : It plays multi-faceted roles and some more relevant ones are as such use of computer as a super-calculator, use of computer to teach about computer and computer programming, use of computer as a direct aid to teaching - learning process, computer based training (CBT), computer managed learning (CML), computer assisted learning (CAL), computer assisted instruction (CAI), use of computer as a data base (libraries, Accounts-tally etc.), for keeping administrative or academic or examination records, e-learning, virtual classroom, audio conferencing, video conferencing, internet, for surfing, any kind of information at the click of a button (through search engine).

Approaches to use Computer in Education : There are four (04) main approaches to use computer in education. They are CBT, CML, CAL and CAI:

CBT : Computer Based Training is concerned with training, which aims at achieving various skills. Teaching is not necessarily directly related to vocational requirements, unlike training which relates to specific tasks within the real world. Hence, CBT mainly relates to any job performance.

CML : Computer Managed Learning implies the role of computer in education as SSSmanagement - aids. Since computer has been used mainly in commercial applications, educational institutions also started using computers for man-



agement function. CML systems are usually conceptualized and implemented as aids to the teacher in their task of controlling and managing the content, pace, sequences and method of learning by the students. As with many computer applications, data recorded in CML for one purpose can also be used for other purposes. Records of student's performance can be used as a base for career and future educational scope, pass rates, etc. CML can also perform the following instructional functions. Assess the learner's present level of knowledge, Diagnose weaknesses or gaps in the student's learning, Prescribe learning activities to remediate the identified weakness, Continuously monitor the progress of the learner.

Computer Assisted Learning (CAL) is the same as CAI
CAL is a self - instructional activity in which the computer is used as a medium. This includes various educational computer applications such as drill and practice, tutoring, simulating and problem solving. Here the learner is generally engaged in two way interaction with the computer via terminal. CAL is the activity where teaching and learning in any part of the curriculum are aided by some application of the computer. The role of computer can be as a teaching aid or it can be more student-centered. The scope of CAL includes a wide variety of functions. These functions are usually realized in terms of a limited number of CAL modes. The major modes of CAL are:

Drill and Practice: It is the simplest function provided through CAL. Here the learner is presented with problems and questions and asked to respond. The learner's responses are corrected immediately. The questions can be filled in the blank type, odd man out, true or false, answer in one word etc. Activities like drawing, measuring and arranging objects too are possible on the computer. Long answers are generally avoided. Such practices are available on Internet.

Tutorial Mode: Here the topic to be studied is divided into a sequence of short sections called frames. A number of problems are presented and it is determined whether the student has mastered the current step. Complex feedback is given which can provide remedial instruction in case of incorrect responses. (Even teaching a language in the lab or learning any foreign language where pronunciation is a big issue).

Simulation Mode: The learner is presented with various data and parameters that characterize some realistic situation and is asked to take a series of decisions. Feedback is given regarding the consequences of the decisions taken. There is however no right or wrong response. The advantage of using a computer here is ultra rapid calculating and data processing. (Pilots and Tankers are trained in the defense).

Problem Solving Mode: Here the learners do their own programming and the educational value is the problem solving skills that the learner picks up. The ultimate feedback is obtained for a solution to the problem.

Conversation or Dialogue: It is based on learning method used by Socrates. Here both teacher and learner take an initiative to start the teaching learning process. They ask each

other questions and answer them. However, this involves heavy/ difficult programming so it is not widely used (Shri Madbhagvat Geeta is based on this and ICT probably used by Sanjay for the benefit of Dhritrashtra-just an assumption).
Games: Video games are popular with children. Instructional video games can be prepared and used most effectively. These games improve the reflexes of the learners (example-how a pilot gunner is trained in Army on simulator).

Databases: One of the modes of learning is through exploration of resource material and library utilization. Through computers, this becomes very simple.

Narrative/ presentation: Here the computer screen is used to present material to the student in the form of an electronic black board. E.g. PPTs, animations etc.

Media Home Platform: It can be used to nurture/develop talents. It can be very amusing and presentation is attractive, especially animated one. It helps in changing of habits, e.g. 'learning by observation'.

Advantages of CAL/CAI

Individualized instruction: Each student receives instruction at his own pace (Small programmes are being handled by a person).
Active participation of students: Each student responds continuously as he receives instructions. Information is presented in a structured form: Teaching is done in small steps (here computer is working as an Instructor).
Reinforcement is given: Immediate feedback. Student gets a clear picture of his improvement/ performance (Due to spontaneous results).
Saves labor of teacher: Teacher's involvement is notional.
Wide variety of exposure: Offers wide variety of exposure and use of multimedia involves all his senses (listening, watching, involvement etc. all at the same the same time).
Flexible Learning: One can study anywhere anytime, only terminal and power is required. Lots of scope for testing/ drilling without problem to teacher. Enhances reasoning and decision making ability.
Confidence Building: Since learner is independent of teacher, he feels capable.

Problems of ICT : Some problems of ICT are Techno-phobia, Paucity of funds, Shortage of trained and proper personnel, Lack of licensed S/W (In India too many languages and S/W cannot be made in all), time is required for teachers for practice, Infra-structure inadequate (In Computer Lab. 60-100 students at a time, ideal strength is -30 in pairs).

Conclusion : No machine can replace the mind of a person but certainly can enhance the capability of a person. Notwithstanding the fact that information and communication technology (ICT) has brought revolution in all walks of life and given real meaning to Globalization (India gave the concept of Vasudev kutumbkam). To make use of the instructional and learning tools available, we should make use of them and ensure that our pupil also draw optimal benefit from them. But remember, nothing can substitute 'Chalk and talk' and close interaction with the pupils. IT to be used as a tool to facilitate teaching and learning, and not be treated as a panacea.

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