Use of ICT in the Schools of Haryana

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Abstract:

 Information and Communication Technology (ICT) can be utilized for the education sector. Education includes online, distance and part time education. There are unlimited applications of ICT in the real world. In his paper emphasis is on the education field. Traditional Non-formal education system process includes activities like admission, Personal Contact Programmes, Exam for any course in a University or Institution. In this process ICT can play a great role in all the activities by providing a lot of benefits to students, teachers, parents and Universities itself. ICT can be used for providing education to the people who are not able to come to school due to various constraints. ICT can play great role in formal and non formal forms of education. The paper examines certain important issues related with the effective implementation of ICTs in all levels of education and provides suggestions to address certain challenges that would help in the implementation of ICTs in education and simultaneously increasing Quality of education.

Keywords: ICT, IT, Education, Schools, Haryana

Introduction

Today we are living in such a knowledge based society, knowledge based global world where knowledge is a great power, economy and strength of an individual and the asset of the nation. It is also true that there s tremendous explosion in its equality as well as its growth. We are in need of new technologies to have success and proper use of this fast growing knowledge. Moreover a mere acquisition of knowledge is not enough, we must have a complete access and mastery over the knowledge getting process. It can only happen with the assistance of the science of information and communication technology.

Meaning of ICT

"ICT is that technology which uses the information to meet human need or purposes including processing and exchanging."

Information and communications technology (ICT) in education is the processing of information and its communications facilities and features that variously support teaching, learning and a range of activities in education."

All these definitions combine Communication technology and Information technology that have thin line between them but cannot do away without each other. When these technologies are applied n the field of education, it is termed as ICT in education. The term too can be used as the connotation to the term Educational; technology because it also uses any hardware and software approaches that can enhance yield better learning outcomes. In the era of Computer technology the term ICT mainly focuses on the infrastructure, devices and sources of computer technology and thus it is imperative to discuss about the use of ICT in education by focusing mainly on Computer based technology.

ICTs stand for Information and Communication Technologies and are defined, as a "diverse set of technological tools and resources used to communicate, and to create, disseminate, store, and manage

information." These technologies include computers, the Internet, broadcasting technologies (radio and television), and telephony. (**UNDP, 2000**)

The term, information and communication technologies (ICT) refers to forms of technologies that are used to create, store, share or transmit, exchange information. This broad definition of ICT includes such technologies as: radio, television, video, DVD, telephone (both fixed line and mobile phones), satellite systems, computer and network hardware and software; as well as the equipment and services associated with these technologies, such as videoconferencing and electronic mail (*UNESCO, 2002*).

Information and Communication Technologies consist of the hardware, software, networks, and media for collection, storage, processing, transmission and presentation of information (voice, data, text, images), as well as related services. ICTs can be divided into two components, Information and Communication Infrastructure (ICI) which refers to physical telecommunications systems and networks (cellular, broadcast, cable, satellite, postal) and the services that utilize those (Internet, voice, mail, radio, and television), and Information Technology (IT) that refers to the hardware and software of information collection, storage, processing, and presentation(**World Bank2002**).

Information and Communication Technology (ICT) Approaches

1. Computer Based Learning (CBL)

The term CBL is gaining popularity to describe all students learning related to the computer. Some considers this term more generally because the term learning more naturally encompasses situations where the computer is used as in educational tool but is not delivering information or instructing the students. The term CBL is therefore used as the umbrella term for all educational uses of the computer.

Using CBL approach in the classroom, teachers should be familiar with different roles. *Hannafin and Savenye (1993) and Cheung (1995)* pointed out that when information technology is used inclassrooms, teachers act as managers, organizers, coaches, guides, initiators, and facilitators. Thus, CBL is not limited to students, computers and software but can also include and encompass various combinations of the computer with other advanced technologies to create learning experiences for the students.

2. Computer Based Instruction (CBI)

The term computer based instruction is used to describe computer applications in education. CBI is also used frequently but again the term instruction might imply only educational uses of the computer where the computer is delivering information to the student and does not include the tool usages of machine. When this term is used, it refers to use of the computer to deliver information to the student.

3. Computer Assisted Instruction (CAI)

Computers are a familiar sight in classrooms in the twenty-first century, and technology has been used to streamline many educational tasks. There are different types of educational computer use, and not every use of a computer in the classroom is considered computer-assisted instruction. The educational uses of computers that are considered to be computer-assisted instruction (CAI) or computer-based instruction (CBI) are those cases in which either instruction is presented through a computer program to a passive student, or the computer is the platform for an interactive and

personalized learning environment.

Computer-Assisted Instruction (CAI), a program of instructional material presented by means of a computer or computer systems.CAI is defined as an interaction between a students, a computer controlled display and a response entry for the purpose of achieving educational outcomes. CAI is a method of instruction in which there is a purposeful interaction between a learner and computer device the individual learner to achieve the desired instructional objective with his own pace and ability. ―Computer-Assisted Instruction (CAI) refers to instruction or remediation presented on a computer. CAI has been developed from the principles of Programmed Instruction.

4. Computer Assisted Learning (CAL)

Computer Assisted Learning (CAL) is used to denote the flow of information between the student and computer so as to provide instruction to the student on specific topics. CAL is used to denote a broader function of the computer in mediating the learning environment of the student in different ways.CAI is at times considered to be an aspect of CAL which deals with instruction.

5. Computer Based Training (CBT)

Computer-Based Trainings (CBTs) are self-paced learning activities accessible via a computer or handheld device. CBTs typically present content in a linear fashion, much like reading an online book or manual. For this reason they are often used to teach static processes, such as using software or completing mathematical equations. The term Computer-Based Training is often used interchangeably with Web-based training (WBT) with the primary difference being the delivery method. Where CBTs are typically delivered via CD-ROM, WBTs are delivered via the Internet using a web browser. Assessing learning in a CBT usually comes in the form of multiple choice questions, or other assessments that can be easily scored by a computer such as drag-and-drop, radial button, simulation or other interactive means. Assessments are easily scored and recorded via online software, providing immediate end-user feedback and completion status. Users are often able to print completion records in the form of certificates. CBTs provide learning stimulus beyond traditional learning methodology from textbook, manual, or classroom-based instruction. For example, CBTs offer user-friendly solutions for satisfying continuing education requirements. Instead of limiting students to attending courses or reading printing manuals, students are able to acquire knowledge and skills through methods that are much more conducive to individual learning preferences. For example, CBTs offer visual learning benefits through animation or video, not typically offered by any other means. CBTs can be a good alternative to printed learning materials since rich media, including videos or animations, can easily be embedded to enhance the learning.

6. Computer Managed Learning (CML)

Computer Managed Learning (CML) is used to indicate the use of computer to perform the tedious and time consuming tasks of learning. There are four broad areas in CML in which computer provide management support to the teacher. They are: to construct, score and analyze tests, to keep record of student's performance and progress through courses, to provide guidance to the student advising him on the choice of next course, and to report on the performance and progress of the students to individual students and administrators of the institution.

Basic purpose of CML is to relieve the teacher from his time consuming routine tasks so that he can utilize it for more profitable instructional work.

Advantages of the Use of ICT in Education

ICT encompasses all those gadgets that deal with the processing of information for better and effective

communication. In education, communication process takes place between teachers, students, management and administrative personnel which requires plenty of data to be stored for retrieval as and when required, to be disseminated or transmitted in the desired format. The hardware and software like OHP, Television, Radio, Computers and related software are used in the educational process. However ICT today is mostly focused on the use of Computer technology for processing the data. In this context, advantages of ICT in education can be listed down as Quick access to information: Information can be accessed in seconds by connecting to the internet and surfing through Web pages.

Easy availability of updated data**:** Sitting at home or at any comfortable place the desired information can be accessed easily. This helps the students to learn the updated content. Teachers too can keep themselves abreast of the latest teaching learning strategies and related technologies.

Connecting Geographically dispersed regions**:** With the advancement of ICT, education does not remain restricted within four walls of the educational institutions. Students from different parts of the world can learn together by using online, offline resources. This would result in the enriching learning experience. Such collaborative learning can result in developing Divergent thinking ability in students, Global perspectives, Respect for varied nature of human life and acculturation and Facilitation of learning.

ICT has contributed in shifting the focus on learning than teaching. ICT helps students to explore knowledge to learn the content through self study. Teacher can help the students by ensuring the right direction towards effective learning. Situational learning, Programmed learning, many Online learning courses are some of the example of self learning strategies that are being utilized with the help of ICT.

Catering to the Individual differences**:**

ICT can contribute in catering to individual needs of the students as per their capabilities and interest. Crowded class rooms have always been a challenge for the teacher to consider the needs of every student in the class.

Wider range of communication media**:** With the advent of ICT, different means of communication are being introduced in the teaching learning process. Offline learning, on line learning, blended learning is some of the resources that can be used in educational institutions. Collaborative learning, individualized learning strategies can enhance the quality of group as well as individual learning with the real society. This can ensure the applicability of knowledge.

Wider learning opportunities for pupils**:** Application of latest ICT in education has provided many options to the learners to opt for the course of their choices. Many Online courses are available for them to select any as per their aptitude and interest. Students can evaluate their own progress through different quizzes, ready to use online tests. This can ensure fulfillment of the employment required in the job market thus minimizing the problem of unemployment. It can also provide more efficient and effective citizens to the society as per the changing needs.

ROLE OF ICT IN EDUCATION

Indian education was well known for its Gurukul System of Education in the Vedic age. Education in India has undergone various phases and stages of development starting in the Vedic age to the Post-independent period. In all stages of development, there was a concern for bringing in quality education reflecting on the practical aspects in education**.**

Teaching and learning in the 21st century should be markedly different from earlier times, as to teaching and learning are now occurring in an increasingly online world. Traditionally, learning environments

were restricted to face– to- face delivery or where distance education was undertaken, delivery was largely characterized by the posting of printed resources and communication were often slow and cumbersome.

Integrating technology into teaching-learning transaction has been found to transform the teacher's role from being the traditional 'Sage on the Stage' to also being a 'Guide on the side,' and students' roles also change from being passive receivers of content to being more active participants and partners in the learning process (Alley, 1996; Repp, 1996; Roblyer, Edwards and Havriluk, 1997).

ICTs offer great potentials and advantages in enhancing students' learning as revealed by Lopez (2003), among others. First, information and communication technologies offer a constructivist approach to learning through the provision of interactive learning experiences. Second, learning through ICTs is more effective as they provide opportunities for using multiple technologies (Video, Computer, Telecommunication, etc.), thereby providing visualization aids in the internationalization and understanding of difficult concepts and processes. This gives opportunities for providing links between theory and practice. Third, ICTs provide opportunities for students to gain valuable computer skills which are germane in today's job market. ICTs also provide students with repertoire of resources to enhance learning. Students have access to current and up-to minute information; with ease students can revise and update learning resources available to them.

The use of ICT in education can improve memory retention, increase motivation and generally deepen understanding (Dede, 1998). Selinger (2004) claimed that ICT can improve the quality of education because Multimedia contents help to illustrate and explain difficult concepts in ways that were previously inaccessible through traditional teaching resources and methodologies. ICT and Education: the fast pace at which Information Communication Technology (ICT) is getting introduced in the field of industries, trade and commerce, the information superhighway is literally knocking at our door and its entry into common life of the people cannot be stalled. With the array of instructional media now available, teachers have more ways to individualize and personalize instruction through computer and related software, video disc technology and telecommunication and various instructional application systems. With Learning from the past efforts, it is important that adequate provisions are to be made for development of software and capacity building for teachers in order that ICT does not remain only as an additional to the existing subject area but become an integral part of the learning experience of all learners.

There are many technological developments that could lead to major changes in the way the teachers teach and the students learn. These developments include: a) computer technology; microcomputers; laptop 2 computers, networking, b) telecommunications, online databases, , satellites, cable TV, c) video disc technology – laser video discs, CD-ROM, virtual reality capabilities, d) management technology – electronic card catalogue, computerized circulations; and e) electronic bulletin boards and instructional applications of hypermedia integrated learning system. The trend in media and technology suggests there may be electronic delivery system in the future, resulting in more options to teachers to create effective and efficient learning environment. It is important to take positive steps for building a more meaningful interface between modern developments in the field of information and communication technology and teacher education programmes. In the developed world, developments in technology have normally gone alongside progress in spread of education. This has made the integration of technological aids and means with educational processes relatively easier.

However, in India, the use of technology invariably has been identified with prosperity and affluence. With the relatively under endowed state of the public education system, technology is seen as an alien element that has no place in school education programme. This perspective has failed to fully grasp the 3 potential of technology to overcome some of the very barriers arising out of inadequate resources. In India, the National Policy on Education 1986 (as modified in 1992) stressed upon employing educational technology to improve the quality of education. The policy statement led to two major centrally sponsored schemes, namely, Educational Technology (ET) and Computer Literacy and Studies in Schools (CLASS) paving the way for a more comprehensive centrally sponsored scheme – Information and Communication Technology @ Schools in 2004. Educational technology also found a significant place in a scheme on up gradation of education. The significant role of ICT in school education has been highlighted in the National Curriculum Framework (NCF) 2005. It advocated for exploration of possibilities of teaching and learning at varied paces, self-learning, dual modes of study, etc., with the help of technology. Use of ICT for quality improvement also figured in Government of India's flagship programme on education, Sarva Shiksha Abhiyan (SSA). Again, ICT figured comprehensively in the norm of schooling recommended by Central Advisory Board of Education (CABE), in its report on Universal Secondary Education, in 2005. With the convergence of technologies, it has become imperative to take a comprehensive look at all possible information and communication technologies for improving school education in the country. In this direction initiations are taken to have a national policy on ICT in school education. The initiative of ICT Policy in School Education is inspired by the tremendous potential of ICT for enhancing outreach and improving the quality of education. This policy endeavors to provide guidelines to assist the States in optimizing the use of ICT in school education within a national policy framework. The National Policy on ICT at School Education (Draft, 2009) aims at promoting universal, equitable, open and free access to state of the art ICT and ICT enabled tools and resources to all students and teachers. Further, it aims at development of local and localized quality content and enabling students and teachers to partner in the development and critical use of shared digital resources. It intends to develop professional networks of teachers, resource persons and schools to catalyze and support resource sharing, up 4 gradation, and continuing education of teachers; guidance, counseling and academic support to students; and resource sharing, management and networking of school managers and administrators, resulting in improved research, evaluation and experimentation efficiencies in the schooling process, in ICT tools and ICT enabled practices in order to inform, guide and critically utilize the potentials of ICT in school education. As a strategy of implementation of the policy, government intends to introduce a programme of ICT literacy across all secondary schools in the states; both government and private within the XI plan period. It is intended to provide schools with a wide range of such teaching learning materials, which will catalyze transformation of classrooms into SMART classrooms. A wide range of appropriate software applications, digital content, tools and resources will be made available through the proposed digital repositories.

ROLE OF ICT IN SCHOOL

Schools today are in the midst of a great change, of which much can be attributed to technological advances occurring in our world today, including access to an abundance of information, and advances in computers, the internet, communications and networking. Prensky (2001), a New York author coined the term digital native to refer to these new learners born into a world of technology and they think and

act differently than students in the past who grew up without technology. Technology is starting to be seen as the driving force of progress and education is promoted as a means to change from an industrial age to an emerging information age. Schools are under pressure to provide access to the educational technology as quickly as possible (Cuban et al., 2001). School is the nucleus of learning and epicenter for development of any society and nation.

The secondary schools in India work in a variety of academic and social contexts. Providing schools with ICTs promises a high return on investment and Information Communication Technology (ICT) is the faster growing field in India. Secondary education is a crucial stage in the educational hierarchy as it prepares the students for higher education and also for the world of work. McFarlane (1999) in a study of the introduction of integrated learning system (ILS) into schools found improved teacher attitudes and use of computers. Technology is most influential when integrated with curriculum and assessment. It can have greatest impact when integrated into curriculum to achieve clear and measurable educational objectives. Integrating of technology with curriculum and professional growth increases students' achievement. Significant student achievement gains for technology integrated with standards were demonstrated by an eight year longitudinal study of SAT1, performance at New Hampshire's Brewster Academy. Students participating in the technology integrated school reform effort (School design model) demonstrated average increases of 94 points in combined SAT1 performance over students who participated in the traditional independent school experience.

Information and Communication Technologies (ICTs) have had significant impact on the traditional school system. They have provided innovative opportunities for teaching and learning, and they have engendered advances in research about how people learn, thereby bringing about rethinking in the structure of education (Lopez, 2003).

With the liberalization and globalization of Indian economy, the rapid changed witnessed in scientific and technological world and the general need to improve the quality of life and to reduce poverty, it is essential that the school leavers acquire a higher level of knowledge and skills than what they are provided in elementary education. It is also necessary for improvement of vocational knowledge and skills at the senior secondary level to enable some students to be employable.

The presence of computers and internet access raises ICT literacy and skills, better preparing the future generations to participate in the information society. In developing countries, the schools represent ideal access points because they cover large part of the population.

Speaking about the current state of education almost one hundred years ago, Dewey (2001) noted: *From the standpoint of the child, the great waste in school comes from his inability to utilize the experience he gets outside…while on the other hand, he is unable to apply in daily life what he is learning in school. This is the isolation of the school – its isolation from life.*

Factors Affecting ICT Implementation in Government Schools in Haryana

Planning for effective use of ICTs in education necessitate understanding the prospective of technology to meet different educational objectives and accordingly deciding which of these objectives to practice for government schools in Haryana state. Pragmatic studies have shown that academic achievement of the students using ICT is significantly related to a variety of factors & variables. These include ICT completeness, Teachers-students deliverables, Encourage active learning, effective feedback and encouragement, Resource Sharing. A review of the studies in this area has been conducted by the present researcher and the details of the relevant studies are reported in the following sections. These studies have been organized into five sections for convenience, viz., ICT Lab environment, rural-urban

schools demography, class- room environment, Teacher ICT skill and Internet-server connectivity. ICT in education can be generally alienated in three areas: administrative, technical and supportive functions for education. ICTs integration is limited to three main components: hardware, software, and technical support. All the above mentioned areas can cultivate the instructive integration of ICTs into education but require large amount of money. Following are the main factors affecting the ICT implementation in government schools in Haryana state:-

✓ Lack of time due to traditional subject syllabus.
✓ Hardware issues: - Monitors, LCD Screen, Servers etc.
✓ Technical difficulties:- Software installation and license issues
✓ Absence or lack of technical support for ICTs integration
✓ Lack of administrative support by the educational institution
✓ Absence or lack of support, training, or techno pedagogical skills
✓ Class management problems
✓ Organizational constraints and barriers within the education system
✓ Group heterogeneity of technical ICT skills

Conclusion:

Quality in education through ICT and its awareness among stakeholders will have positive impact on the society. ICT can be helpful in quality and standards of education by implementing it in various phases of education. ICT can be employed in formal and Non-formal types of education and would eventually make the learners employable and socially useful part of the society. By employing ICT in teacher training can save a lot of money of the Government. Moreover a lot of qualitative improvement can be seen as resource persons for the training can be best of the world. By employing ICT in administration can help in solving the problem of Absenteeism of students and teachers. Good quality content is one of the major issues and directly affects the standards of education and quality. By overcoming the certain challenges involved in the process of education can help a lot in this side. Conclusively a lot of quality improvement is possible after careful and planned implementation of ICT in education by various stakeholders.

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