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Role of information technology in education

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Abstract
Revolutions have always begun from the world of words & Ideas. It comes as no surprise that education is breaking the entire predefined boundary to weave its own attractive web in the internet (Information Technology). With recent development and advances, Information Technology in education is virtually a new source of educators, teachers and students (all learners). Information technology is being successfully utilize in resolving many our problems: hence its success is generalize to the teaching-learning situation with IT in others fields develops pressure for education to accepts technology by acquiescence of the new technologies based on advocacy to greater extend than it is based on supporting evidence. Change is the basic/fundamental rule of nature but this change is always purposeful & provides various new opportunities & makes a co-ordination with nature. In the same way, change is required in entire education system which should be fruitful & lucrative for whole world. So, Information Technology (IT) is also part of this change& has created a new revolution in education. Now, everybody realized the importance of IT because it is affecting to the quality of teaching-learning process. Recent developments in IT have opened new challenges & opportunities for te education. The present article describes that how IT plays a significant role in education. The pace of IT development & effective use of it in educational settings have drastically accumulated during the past decade through the combination of computation, connectivity, visual & multimedia capacity, minimization, & high speed have radically changed the potential for technologies in entire education system. These developments are now making it possible for education on-line. IT as a teaching –learning tool has enormous potential to elevate education. There is enough scope for teacher to dynamically interact & collaborate with subject content. Because it makes them more than one sense simultaneously. This article assesses the effective role of IT tools in teacher training & education programme. In recent years, IT have widely & successfully used for assess to teacher education, to raise its quality, to reform, reposition & engineer it. A nation's intellectual strength depends on IT support. The use if IT to enhance the efficacy of transaction & productivity is the driving force in this new era of social & economic transformation in the new society called "Information Society". Moreover, IT have changed the world more permanently and profoundly than any technology so for seen in history and brought about a transformation of civilization to match. (Johi Diebold). In India the government has announced "operation knowledge".Inernet connectivity in all schools will convert them into smart schools where the emphasis is not onlyon IT but also use of skills & values (Manorama Year Book 2002).' Information Technology has now become the driving force in education field. The IT convergence of technology has emerged as a new force to bring about multiple educational services through single channel. IT has being seen as a panacea for solving major educational problems. Similarly, introduction of IT in the educational process is seen as a step towards improving the quality of education and breezing the social and educational gap (Agarwal 1993). However, experiences indicates that advance ness of IT in education have been hogged by those who could afford to have access and used IT.

Keywords: lucrative, radically, accumulated

Introduction
A nation's development potential depends upon its ability to continuously educate its population & create armies of skilled manpower. Development of IT has opened various cost effective approaches for expanding the education system. With this development, use of IT in acquiring knowledge & skill has become an essential element in teacher education & training programme. Due to this, education sector over the years has extremely developed in organized way. These IT elements in educational processes have magical effects. Besides, Information technology is playing a pivotal role in developing the new life skills needed for the twenty first century. Time has come to realize that computers should be considered a necessity and not a luxury in the class room. Technology is a tool, which should become a part of our educational and research processes. But it is necessary to ensure that all hard-and software is equally available to all. Global Networking computers and the people who use them are completely transforming the global economy. An e-revolution has set the ball rolling in India from shopping, trading, banking and education. The impact of electronic revolution and emergence of IT has changed the color of India, for example on-line education.

Globalization with the instruction of IT (Information Technology) is bond to influence and transform either the existing educational outfit, changing the existing curriculum bringing in a new liaison of learning material and networking schools, Instruction in the educational technology must become a part of teacher education. Teachers must learn to develop new information, technology modules to avoid

commercial takeovers, and to retain the control of education by educationalists. IT in the global context would demand that the educational planet look beyond the current urban classrooms. We have to devise plans of education in electronic environment, reaching out far-flung rural areas. Computer literacy computer-aided learning instruction and compute-based schooling become important inputs in teacher education. Curriculum development includes components like innovative items in the areas of media production, interactive video and multimedia software. Teachers should adopt an instrumental design that helps the learner master methods not really used like heuristic method. It is believed that it would result in a shift from the traditional learning atmosphere to one that encourages exploration, problem solving, decision-making etc., It is a shift from prescriptive classroom teaching to participatory, teaching-learning process. In this scenario of schooling, traditional tests cannot measure the abilities and skills resulting from afore motioned shift. There is a need to think of comprehensive student portfolios based on observation and situational tests.

A strong IT infrastructure has given an institution a competitive advantage for the best faculty & an advantage in today's cut throat competition for absorbing external research grants to execute teaching & research etc. in a shorter span of time & wit great resolution. The quality of teacher's education environment for digital information storage & retrieval becomes more important than conventional method.

IT enabled services boom which is sweeping Indian industry is that new technologies are increasingly being used in the nation's classrooms. It has opened immense possibilities for teacher in teaching-learning process. The click of the mouse in the hands of the teacher is information not for one child for his family also. His canvas once limited to resources available has now become a global note page. Empowering teacher with IT skills gives the confidence to equip himself with 21st century skills. Now-a-days various teacher training institutions providing in-house training for use of significant IT application in their teaching method. According to scientist, ICT is still growing tool in the foreseeable future & can create vast opportunities in teacher education system.

Concept of Information Technology (I T)

Information technology is "the technology that investigates the properties & behavior of information, the forces growing the flow of information & the means of processing information for optimum accessibility & usability". According to Information Technology Association of America (ITAA) "It is the study of design, development, implementation & support/management of computer based information system, particularly software applications & computer hardware". It deals with the use of electronic computers & computer software to convert, store, protect, process, transmit & securely retrieve information.

When computer & communication technologies are combined, the result ids IT or "infotech". IT is a general that describe any technology that helps to produce, manipulate, store, communicate or disseminate information. Presumably, when speaking IT as a whole, it is noted that the use of computers & information are associated. Today, the term IT has ballooned to encompass many aspects of computing & technologies & term is more recognizable than before. Right now, IT is in introductory stage, it has to go a long way.

How information technology help teacher

- Information Technology associated with the problem solving.
- Information Technology allows teachers to utilize & experience real situations.
- It is very useful to visualize real & abstract cases.
- Information Technology associated with a shift from memorization towards the Virtual creation.
- It maintain regular attention & easy for reinforcements.
- Allocating learning materials as per individual's needs & interests.
- Facilitating bibliographic searches.
- It creates uses to worldwide sharing of views, ideas & knowledge.
- It develops collaboration between teacher & student.
- It encourages higher level of thinking skill.
- It increases the efficiency of teaching task.
- It is meaningful & action-oriented- presented in a more meaningful manner for the decision to be made.
- It provides best & fastest way of communication.
- Providing information for guidance & reference.
- Providing immediate feedback to learner for better interaction & motivation.
- Information Technology have introduced new interactive learning package in content-related courses relevant to the teaching & learning process.

IT- Enable Education

Today, education system around the world is tremendous under pressure to use the IT in teaching system. With emerging new technologies, the teaching profession evolving from lecture based instruction to interactive learning environment. Technology based instruction produces measurer able & significant changes in the learners. This technical development has removed physical barriers of education & allowed teacher interaction on a global scale. The World Wide Web (WWW) has been true revolution in bridging the gap between teachers.

Designing & implementing successful IT –enable teacher programme is the key to fundamental, wide-ranging educational reforms. For teacher to reap the full benefit of IT, it is essential that they are able to efficiently & effectively use these new tools for learning because IT has proved to be a major stimulus for initiating studies & for formulating new ideas about teaching method & the process that facilitate learning. Institutions must provide all facilities to teacher for proper user of these tools for optimum success of teaching – learning activities.

Technological advancement have changed entire teaching – learning process as we have witnessed in recent past. There are wide range of technologies & instructional media which is actively using in teacher education to meet hottest demand of educational environment. Different types of media have their own advantage & distinct characteristics & thus, can be effectively used to achieve instructional objective at different levels & in different domains. These technologies can be categorized by delivery media or interaction tools-

Delivery Media

Media is any physical means of communication i.e. it is the printed, graphic, photographic, electronic mechanical or other means of arresting, processing & re-constituting visual or verbal information (knowledge, skills & attitudes).

- **Email:** Used for question-answer & discussions.
- **Web Forums:** Also called discussions forums/bulletin boards. Most common form of interaction in on-line courses.
- **Newsgroup:** Public forums that use the Usenet system.
- **BBS:** A computer bulletin board that you dial like a web forum+ email+file transfer.
- **Chat Rooms**
- **Shared Whiteboards:** Allow class members to write on the same digital white board.
- **Teleconferencing:** Use to deliver instructor audio for collaboration.
- **Videoconferencing:** Either from expensive, high quality dedicated System or from less reliable desktop versions.
- **MMOs & MUDs:** Virtual worlds where users take on avatars & internet in various ways.

When teachers adopt IT, they achieve multiple goals & expand conception of teaching & education. Through the use of these technologies, teachers can promote democratic learning globally. In this process, they will-Participate effectively in open & flexible learning environment as a learner& as a teacher. Develop learning network that bring value addition in teacher education. Provide learning opportunities to whole communities. Helpful in multiple sittings & available any time & anywhere- to better accommodate teacher busy schedule. More affordable than traditional learning.

The integration of IT with teaching & learning have developed & promoted independent model of learning that promotes initiation & creativity with information. The most important principle for the individual development of teacher is active, project –based learning. Teaching must be carried out in such a way as to strongly reflect the general principle of education. As competition increased, most of the teachers are using sophisticated IT tools on order to differentiate themselves from others & also make more effective their teaching. Now, every professional teacher understood the importance of IT for his job profile. Rapid advances in IT have created unprecedented opportunities in the field of education that's why they are going for mastering in IT skills. In IT tools, multimedia becomes very popular. It means an integration of sound, images, animation, videos, & text along with computing technology. It helps learning browsing through e-system & creating 3-D in various ways. It also helps learner in mastering various languages. In parallel with multimedia, hypermedia concept is also working This concept related to the organization of information from the view point of the end user. The concept of "hypertext" as a worldwide network of interlinked documents that may be accessed at will, under computer control, by all. Besides, there is a plethora of "Edutainment" programmes that are interactive & that make teacher an active rather than passive learner. By this, teachers absorb more & make effective teaching when the information is visual or auditory or both as with multimedia.

The on-line virtual teacher education system or OVTES have proved effectiveness to present teacher education system. So, quality of teaching is being increased by use of ICT. Definitely, It has brought more fruitful changes in teacher education & make more an interactive, effective & motivating on-line virtual learning experiences. It seems the future teacher education will be "on-line virtual teacher education".

INDONET allows access to network abroad (like TELENET any TYMNET of the USA, DATEX-p of Germany, TRANSPAC of Fracne, etc) Videsh Sanchar Nigam Limited (VSNL) through GPSS and EASYNET provides overseas communication servies. GPSS provides access to other packet Switched Data Networks around the world, interconnecting millions of computers and data terminals. It facilitates smooth and error free transfer of data, whether it be for Electronic Mail, Electronic Funds Transfer, Airlines/ Hostel reservation, Credit Card Verification, Information Retrieval, Software Development, Inter or Intra company data transfer or for any other applications. GPSS confirms to CCITT's x. 3,x.25,x.28,x.29 for x.75 recommendations. It supports asynchronous (Character mode) as well as synchronous (Packet moda) data terminal equipment and can be accessed on Public Switch Telephone Network for speed up to 2,400 BPS and on leased line for speed upto 9,6000BPS. GPSS can be accessed through PAD's installed at Delhi, Madras, Bangalore, Hyderabad, Pune, etc.

No doubt distance education can be a valuable means of providing access to higher education to those who otherwise might be prevented from it. But successful distance education programmes require careful planning, highly motivated and self-disciplined students, substantial initial investment and major time commitments by the faculty involved. Most advocates of such programmers seriously underestimate the real costs involved as well as the complexity and duration necessary for the successful introduction and use technology.

Moreover, ICT has developed customized course curriculum for different learning needs. Material can be individualized according to the teacher's need. Teachers can access e-learning anytime & anywhere. Further, it can be updated instantaneously highly scalable. It gives unique benefits to enthusiastic teacher who focus on exploring, sharing & inspiring best practices in education. It offers teachers to help them cultivate learners & critical thinkers. These technologies offers teacher a range of forward thinking, educational solutions for schools, based on 21st century learning needs. The tea will also learn enhance his/her knowledge resulting into skills development & a chance to shoulder more responsibilities. This helps the teachers to save time & work towards their required goals. With broadband & computers easily available, sharing best practices & best faculty has become possible to radically improve teaching – learning standards. In addition to this, teacher must use Computer Aided Learning (CAL) which can be effectively used for drill & practice, tutorials, simulation & modeling & Technology Aided Learning (TAL) concept which takes teacher to higher levels of "thinking/processing" & enables them to become perfect digital teacher. It is need of the hour to make ICT media as means rather than ends. So, contemporary teachers need to know difference between teaching without technology & teaching with technology & should design the curriculums

that use technology meaningfully.
The society for IT & teacher education has identified basic principles for development of ICT teacher education (SITE2002). This are-

- Information Technology should infuse into the entire teacher education programme.
- Information Technology should be used in context.
- Teacher should experience innovative tech-supported learning environment in their education programme.

In this regard, present Union HRD Minister Arjun Singh announce a national mission on education through ICT (NMEICT) with the objective of providing broadband connectivity to all institutions of higher & technical education countrywide. "For increasing GER (Gross Enrollment Ratio) by almost 5%, he is strongly recommended to make use of ICT to increase access as it is more cost effective.
The information technology revolution has a significant impact on demand for various types of education like marketing education, medical education, commerce-library etc. There is need for broad-basing IT education and integration at all levels of education sector with PG or Research qualification would be required for the country as worked out by the education, by 2008 at the school sector, it is estimated that 1,00,000 teachers are required. It was projected on the basis of current availability of intakes by 2008 will be 2.63 lakh PG. 7,85 lakh Graduates and 7.42 lakh diploma holders in IT. (Task force reports 2001).
To meet such huge demand India needs to extend the infrastructure of the IT education. A change in the present education system is also required. If these things take place at rapid rate, in few years from now we will find new educational opportunitites through this human internet. Info technology in education: There is a new thrust in education in the form of information and communication technology. The fundamental challenge is to convert information society into a knowledge society. This development has far reaching implication may for teacher development. Information and communication technology may be summarized as the convergence of tele-communications, televisions and computers.
Information technology may enhance cooperative learning in the following ways:

- Group documents creations facilitated by computer ability to shared display and edit data in a group environment. The computer can manage complex group projects.
- Telecommunication provide students with a ability to work together
- Multi media presentation provide an arena for all students to pool their strength in the skill areas of making scanning images, creating animation and writing texts.

It enhances teacher professionalism in the following ways, Information technology is used to overcome the barriers of time and distance to collaborate on professional issues:

- Information can be retrieved from local and on line database to plan lessons.
- Computers based multi media presentations can be used to create more effective class room presentations.
- Computers can be used to manage individualize learning and to empower students to become active learners and interdisciplinary and cooperative learners.
- Desk Top Publishing (DTP) and computer based tools can be used to create instructional material.
- Internet has a significant impact on education in various ways like the use of research pruposes, networking among institutions and teachers.

Classroom courses are being replaced by e-learning and corporate Universities. These agencies embrace the use of new technologies very fast. Thus IT has created demand for new infrastructure facilities e-masters and, skilled manpower in the country. It has created immense challenges and opportunities in the education sector of the country.
So, it is clear that IT provide powerful tool to help teacher access vast knowledge resources, share knowledge & solve complex problems using cognitive tools & to represent their knowledge with text, images, graphics & videos. This rapid growth in the use of IT in teacher education has created the need for all teacher education faculties to be proficient in the use & integration of IT into mainstream teacher education programme delivery.
ICT may not survive in its present form for long period. Sooner or later its form will change. The emerging 3G & 4G MOBILE PHONE technologies can indeed facilitate further new developments. An alternative technology could be integrating the mobile phone with TV screen, so that visual information can be viewed easily. Similarly, there is a possibility for developing interactive radio on the lines of interactive TV. So, these technologies again boost the entire education system.

A shift from teaching to learning

Due to rapid & effective use of IT in education, the role of teacher have changed from knowledge to learning facilitator, guide, mentor, knowledge navigator & co-learner. IT provide powerful tool to support the shift to student-centered learning & new roles of teachers.

Challenges to Education

IT revolution has a significant impact on demand for various types of education like, marketing education, medical education, commerce-library etc. There will be various demands the use of technologies tools such as qualities education, use of internet in libraries for sharing of information and research exploration, Data transferring etc. IT education in future would be more as an enabler, having relevance in all fields of human activity. For this purpose there is, need for broad-basing IT education and integration at all levels of education. Moreover, since the employment opportunities for the IT professionals are immense from the home ground and abroad, it should be developed according to the demand.
ERNET (Education and Research in computer Networking) in India is academic and research network which follows the seven layer Open System Interconnect (OSI) model, the International standards of computer networking and telematics. The e-education and virtual University are the pillars of Modern Global Education System and are the result of Digital Convergence.

Impact of internet services on education

Global electronic mail: Electronic mail allows a user to send messages electronically to individuals group of individuals as a long as there are networks connecting them. For many users E-mails is the first real exposure to, and use of internet. Internet mail delivery is more reliable.

Views and News-USENET: UNENET is the Bulletin Board Services of Internet. Electronic BBSs are very effective ways to share information. The messages in UNENET are organized into thousands of topical groups or 'Newsgroups' which cover specific areas of internet. USENET is read and contributed to, on a daily basis, by millions of people.

Remote Login (telnet): The telnet protocol allows an Internet user to begin to a remote host from the local host. Once connected and logged into the remote host, the user can enter data, run programmes, or do any other operation just as if he were logged in directly to the remote host. While running telnet, the programme effectively makes the local computer invisible during the session on the remote computer.

File Transfer Protocol (ftp): The file transfer protocol makes it possible to move a file from one computer to another, even if each computer has different operating systems and file storage formats. The files may be data, programmes, text anything that can be stored on-line. Users area required to login to each computer, thus ensuring that they the right to take put files on those computers.

Information Servers- Navigators: Over, 1,500 new hosts join Internet each month. While this creates a global information sea of awesome proportions, it also makes it difficult to find anything specific on Internet. There are several powerful searching utilities.

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Gopher: Gopher can browse through Internet to find the data one is after. It is a menu-driven system at the client and facilities obtaining of information in an orderly, logical manner through menus.

Archer: This is a type of global librarian that automatically reaches out to a whole world of Internet services and indexes their files, to generate a single database that can be easily searched.

Hytelent: It is a Hypertext Browser for telnet accessible sites. It assists Internet users in accessing resources such as library catalogues, free nets, full text database electronic books and many other useful services which can be reached via remote login.

Window Area Information (WAIS): It is a programme that can search dozens of database at one go an is designed to retrieve full text documents from various sources.

World Wide Web (WWW): It is the most advanced browsing an searching system deployed on the Internet based on the hypertext paradigm. WWW allows one to explore a seemingly unlimited worldwide digital" WEB' of human knowledge. Powerful freeware like Mosaic and Cellular provide an interactive graphical user interface to the WEB.

Internet Connectivity through NICNET

NICNET, the satellite-based computer communication network of the National Informatics Centre (NIC), is a very viable Gateway to internet, in India. Mail only connection the dial-up terminal connection you link to India. Mail only connection the dial-up terminal connection you link to an Internet node of NICNET as a terminal on the NICNET computer and set up a shell account, which uses a UNIX command line. The Internet access software (telnet, ftp and so on) is run on the NICNET node. The effect on education depends on social design of electronic media Computer-Supported Cooperative Learning (CSCL) techniques are developed to retain the collective aspects of distance learning.

Conclusion

This paper provides evidence that there is clearly strong relationship between the development of IT & teacher education. IT has created a new dimension in teacher education, both within & beyond the curriculum & is still looking at further opportunities of becoming more useful via new emerging technologies. We are really on the threshold of new opportunities & this is the beginning of a new horizon of teacher education. The moiré opportunities for IT to create new paradigms of teacher education will depend upon leadership-shared vision & on appropriate & continuous professional developments.

In the forgoing pages we have discussed the fast growth of information technology in educational field. In view of rapid advancement of knowledge and the rapid growth of complexity of technological endeavor, the future will need greater technical competence, and as consequences of this need educators must provide improved method for the majority of today's needs and face tomorrow's challenges. Advance technology like information technology can be used to educate large numbers of learners.

The world is shrinking rapidly but knowledge is expanding at a tremendous rate. IT has brought the world together in ways that nobody would have expected. Just-in-time education that meets the needs of individuals as they occur makes teacher education more meaningful & effective. As such IT plays a vital role in day-to-day life at present as it is found very useful & practical. IT combines knowledge & pleasure & visuals to be used with imagination, ideas, artistic ability, professional experience & expertise. It can be said that IT has changed the

way of teacher education was done decade before. The teachers are having with them the system, which help them to fulfill their needs & goals in desired way. It is not only helpful to teachers but it has also changed the way of entire education is being done. In order to give lecture, teachers must be able to effectively use IT tools to share knowledge with large number of people. It is also found that teachers overwhelmingly the use of IT tools in in education system. Teachers educated via these media will never fall back on knowledge & skill acquisition. The coming of organized & consequent growth of this sector will further boost IT application in teacher education. There is need for an empirical study to find out to what extent IT application have improved the productivity of the teaching system vis-à-vis the cost of IT application. When such cost-benefit analysis will be done than only IT fully brings education optimum level. A characteristic of IT is its phenomenal rate of growth. There is need to change in each & every sphere of education system to improve its quality for preparing the teachers society & its manpower to face the challenge of future & to copy with the changing scenario which can enrich the status of teacher education. The teacher's role has shifted from teachers to knowledge workers, consultants & councilors. Interactive broadcasting can fulfill life-long education for all. Therefore, educational technology will help teacher in improving teaching-learning process.

We have gained significant experience in use of IT tools in teacher education & to deliver educational & training programme but still huge requirement of training of untrained teachers those engaged to meet the objective of "education for all". Hence, for the teacher the challenge is to learn to be a facilitator of the learning process rather than the source of knowledge. Moreover, IT is important for teaching institution & research & will gain importance over the next decade. However, sufficient central & state funding & co-operation must be provided to ensure that IT services infrastructure is established, maintained & developed, to elevate the teacher education.

According to Alvin Toffler: The illiterate of the 21st century will not be those who can not read and write, but those who can not learn, unlearn and relearn.

References

1. Anup Pant. Epistemological and Methodological Issues for the Conceptualization, Development, and Assessment of ICT-TPCK: Advances in Technological Pedagogical Content Knowledge (TPCK). Computers and Education, 2014; 52:154-168.
2. Banks F, Leach J, Moon B. New Understandings of Teachers' Pedagogic Knowledge. In Leach, J. and Moon, B. (Eds.) Learners and Pedagogy. London, Paul Chapman Publishing in association with The Open University Press, 1999.
3. Chaudhary B. Globalization and Education. Globus Journal of Progressive Education. 2016; Vol. 6, No 1.
4. Beetham H, Sharpe R. An introduction to rethinking pedagogy for a digital age. In Beetham, H. and Sharpe, R. (Eds.) Rethinking Pedagogy for a Digital Age: Designing and delivering e-learning. Abingdon and New York, Routledge, 2007.
5. Coleman J. Theories of youth development: controversies of age and stage. The educational and social impact of new technologies on young people in Britain: Theorising the benefits of new technology for youth. Oxford, UK Economic and Social Research Council, 2008.