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ROLE OF INFORMATION TECHNOLOGY IN EDUCATION SYSTEM

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ABSTRACT :

The greatness of any nation depends largely on the system of education that is used to nurture its talent from within. With the digital era taking the spotlight, and the world rapidly reforming into a global village, it is now quintessential that a spirit of healthy competitiveness be inculcated in the budding minds of this country. While trying to remodel and upgrade the education system, a key issue is that of quality of education processes in the country. Needs and expectations of the society are changing very fast and the quality of higher education requires to be sustained at the desired level.

Information technologies help in promoting opportunities of knowledge sharing throughout the world. These can help the teachers and students having up-to-date information and knowledge. Accurate and right information is necessary for effective teaching and learning; and information technologies (Haag, 1998; p.10) are “set of tools that can help provide the right people with the right information at the right time.” Students are independent and they can make best decisions possible about their studies, learning time, place and resources. Students are able to work in collaborative and interactive learning environments effectively communicating, sharing information and exchanging ideas and learning experiences with all in the environment. This paper discuss the role of Information technology in education system. I intend to put forward some challenges and suggestions.

Keywords : IT (Information Technology) , Education System , Computers , Teaching , learning.

Introduction :

This is the era of information and technology (IT) . Nowadays, every aspect of our life is connected to IT. Huge usage of IT is emerging in all over the world. Although, use of information and technology is spreading its impact in every field of life. But, it impacts significantly in the field of education to make the learning process interesting as well as successful. Information rich society promotes new practices and paradigms for education where the teacher has to play new role of mentoring, coaching and helping students in their studies rather to play the conventional role of spoon feeding in the classrooms. Students can learn independently having a wide choice of programme selection and access to information. Students can be involved in skill oriented activities in group learning environments for accumulated knowledge. They can interact and share learning experiences with their teachers and fellow learners in knowledge construction and dissemination process. They can receive and use information of all kinds in more constructive and productive profession rather depending upon the teacher. Branson (1991) stated that students learn not only by the teacher but they also learn along with the teacher and by interacting with one another. Indeed, now students can learn much more than that the teacher teaches in conventional learning environments. For productive teaching learning process teachers and students have to use information technologies according to their requirements and availability.

INFORMATION TECHNOLOGY :

The history of information storage and dissemination indicates that human being used different things for information storage, its display and transmission. In different ages people used different materials and methods for communication such as rocks and stones, papyrus, palm leaves, animal leather and handcrafted manuscripts for storing and transmitting the information from one place to another and to the next generation. These means of information were limited and confined to the elites but “the advent of printing enabled information to be truly widespread throughout the world to move to a more equitable level in terms of access to knowledge” (Menon, B., 2000, p.xi). At present, knowledge may be regarded as power and it comes from having information. Information encompasses and relies upon the use of different communication channels or technologies – called information technologies, for its effectiveness and equal access. Information technologies may extend knowledge beyond the geographical boundaries of a state or country providing relevant information to the relevant people round the clock. Information Technology “is any computer-based tool that people use to work with information and support the information and information processing needs of an organization” (Haag, 1998; pp.17. 518). It includes computers and its related technologies; WWW, Internet and Videoconferencing etc. Information technology can be used to promote the opportunities of knowledge dissemination. It can help the teachers and students having up-to-date information and knowledge. Accurate and right information is necessary for effective teaching and learning; and information technology (Haag, 1998; p.10) is a “set of tools that can help provide the right people with the right information at the right time.” 48 In this sense, information technologies may be the result of knowledge explosion, where according to Marriam, and Cafarella, (1997, p.15) “computer technology (software) extends the mental ability.” Therefore, information technologies may include computer and its related technologies of high tech and low touch nature. Charp, (1994) called them emerging technologies and stated that these are the products coming out of laboratory and into the hands of educational community. These include wireless communications, the information highway, asynchronous mode, integrated services digital networks (ISDN), multimedia applications, personal digital assistants, artificial intelligence and virtual reality. These technologies would be big of brain and small of mass, depending upon computer technology for their effectiveness and increased capabilities. Similarly, Rashid, M. (2001) discussed the interactive video, CD-ROM, compact video disc, Internet, WWW, teleconferencing, computers, satellites and e-mail as emerging information technologies, and according to him these are “current technologies incorporating into the teaching learning environment [process]” (pp.301-338).

ROLE OF IT IN EDUCATION :

Broadly, Information Technology is defined as the use of computers to study, send, retrieve, store and manipulate information used widely in business organizations and now in the field of education as well. Many of the Schooling Systems are now using Information Technology to provide better understanding of difficult concepts to students in classroom and at home.

1. Information technology has made both teaching and learning easier:

The use of Information Technology in classroom has left behind the traditional methods of giving long boring lectures. Using IT the teachers can create interesting audio and visual presentations which will keep the students engaged and will give them a greater understanding of all the concepts. Beside this, such methodology can give rise to interactive sessions between students and teachers. Everyone likes watching animated videos. Using Information Technology the whole classroom can be digitalised thus making both teaching and process of learning much easier.

2. Information Technology helps the teachers and administration to keep track of all students in classroom:

Information Technology has given rise to various tools and application which can be used by School administration and teachers to track the progress of individual students and the parents can also be kept up to date about the achievement of their child. This technology can also be useful for the teachers to help the students in their weak subjects and provide them some extra time and notes. Thus IT has saved the teachers from old methods of maintaining student records on books and registers.

3. Education using Digital Books:

Many schools have now digitalised their classroom, by encouraging the students to use information technology to submit their tests, homework and assignments. The teachers also promote the use of electronic books to read the lectures. These digital books can be read anywhere in a café, on the train and at home according to convenience. This advancement has played an important role in protecting our environment as less books means less cutting down of the trees.

4. Information Technology has made education fun and entertaining:

In the modern world of today every student knows how to use computer, tablet and mobile phones. Even though, the Mobile App Development with IT has made education fun and exciting. The information technology can be used to direct this addition in a positive manner by introducing tablets and PCs in class room for the purpose of interactive sessions, to see the relevant videos, share knowledge, to solve queries and concepts by using Facebook or Whats App private classroom groups. The use of this technology will make education more fun and entertaining for both the teachers and the students.

5. Information Technology has made Education Accessible for all the students:

Introduction of virtual classroom has completely displaced the traditional classroom methodologies. Thanks to this advancement now a student can attend lectures from any part of the world, all he needs is a good internet connection and his personal computer. This technology allows the student to study in their own comfort zone at any part of the day they like. There are many sites which are providing free online education services like the Khan's Academy which allows the student to acquire education on any topic they like, irrespective of their age and school curriculum. Plus now the students can acquire their academic papers using Electronic learning from areas which were once isolated from the rest of the world.

6. Information Technology has made Access to Research and information much easier:

Few years back the students had to spend hours in library to search for information or data they need for their dissertation or assignment. Thanks to information technology they can now access any information they want using their computers or mobile phones. They can search Google and YouTube for any sort of article they are looking for thus making their writing much more comprehensive and understandable.

7. Information Technology has made group studies and Assignments much easier:

In a traditional classroom when a teacher asks the student to conduct group study or do an assignment, it used to create confusion because every student has got their own opinion and group discussions would create a total mess. Thanks to information technology now the discussions can be conducted on social media forums or using tools and applications where they can upload their task and collaborate with one another in a perfect manner. Information technology is playing a major role for both, the students, to achieve a better understanding, learning and education while teachers keep themselves up to date and improve their teaching skills.

PREPARATION FOR THE AGE OF INFORMATION TECHNOLOGY :

Certain skills capabilities of using different information technologies are necessary for students as well as teachers. Therefore, gradual encounters with the technologies are necessary to prepare themselves for the age of information technology. They will anticipate in the age of information technology as:

- ❖ Requiring students to use electronic databases in their searches.
- ❖ Encouraging students to use electronic mail to ask questions, and for submitting assignments.
- ❖ Becoming familiar with the advantages and disadvantages of the technologies and exploring the capabilities of compact-disc read-only memory (CD-ROM), tele/videoconferencing etc.
- ❖ Surveying students about their familiarity with the information technologies and asking if they will share their knowledge and skills with the class.
- ❖ Using a word processor to develop class notes and editing a version to use as students' handouts and a version for overhead transparencies.
- ❖ Using computer programs for keeping records in large class-enrollment lists, test items and so on and having students review and update their own record from time to time.

- ❖ Using different packages for data analysis
- ❖ Encouraging students to include visual elements as part of their projects.
- ❖ Spending students' time as a multimedia workstation, planning a presentation; assembling projection graphics, video clips, animation, sound and other materials; trying to match particular materials with specific learning objectives; and integrating the materials into a unified presentation.
- ❖ Eliminating and/ or minimizing physical problems arising from the use of information technologies.

SOME CHALLENGES IN IMPLEMENTATION OF IT ENABLED EDUCATION IN INDIA

Although IT has the potential to improve education system of a country to a great extent, yet it is not the case in the developing countries. There are multiple issues and challenges confronting the implementation of IT education in schools and educational institutions in these countries and the problems are much more magnified in case of schools located in remote villages and rural areas. For rural schools in specific, the introduction of IT faces hindrances in the form of internal and external barriers. Internal barriers to IT implementation in schools in rural locations include.

• Lack of trained teachers :

A major obstacle in the use of IT in rural education is the lack of knowledge and skills. There is dearth of dynamic teachers formally trained in IT. Moreover, there is hardly any quality training imparted on a regular basis to teachers involved in IT education.

• Unfavourable organizational culture and poor attitude and beliefs :

Often in developing nations, the educational organizations and school management fail to perceive the importance and seriousness of the role of IT in education enhancement. Also, the teachers' attitudes and beliefs are outdated and orthodox. They are unaware and rigid and not willing to adapt to the change. They harbor false beliefs that IT is meant primarily for the youngsters and are skeptical about the effectiveness and utility of ITs in school education.

• Shortage of time:

In schools, teachers are usually burdened with multiple tasks other than teaching. Moreover, they have to teach all types of subjects along with IT. They do not have time to design, develop and incorporate technology into teaching and learning. The teacher needs time to collaborate with other teachers as well as learn how to use hardware and software and at the same time keep oneself updated with the latest technology.

• Issues of maintenance and upgrading of equipment:

Maintenance and upgrading of IT equipments in rural schools is subject to their limited financial resources. Largely, the government initiatives are restricted by budgetary constraints. The IT projects in rural schools are not self-sustainable. When the projects launched by government or private sector phases out, the maintenance of equipments need to be borne by the students. The students often with weak economic backgrounds are unable to fund the maintenance and computing facilities expenses.

• Insufficient funds :

Appropriate and latest hardware and software facility availability determines the effective and efficient usage of technology. In developing countries, technology implementation into education systems is a difficult task as it requires a magnum of funds, infrastructure and support facilities. Lack or insufficiency of finances leads to redundant and obsolete infrastructure and equipments .

● Challenge of language and content :

A large proportion of the educational software produced in the world market is in English. Majority of online content is available in English. In developing countries, English language proficiency is not high, especially outside the urban areas which becomes a serious barrier to maximizing the educational benefits of IT.

● Shortage of equipments :

There is lack of computers and computer-related resources such as printers, projectors, scanners, etc. in government schools in rural areas. The ratio of computer per student is insufficient. The option of private schools is very few or missing in these regions. There is a mismatch between the complementing resources and inappropriate combination of IT resources result into reduced diffusion of technology as well as poor IT understanding in these educational institutions.

● Unreliability of equipment :

Even the basic IT equipments and computers possessed by rural schools are unreliable and undependable. The schools lack up-to-date hardware and software availability. Old and obsolete equipments are major hindrances to IT adoption and application.

● Lack of technical support:

Rural schools face issues related to technical know-how, absence of IT service centers, shortage of trained technical personnel. Whether provided by in-school staff or external service providers, or both, technical support specialists are essential to the continued viability of IT use in a given school. Without on-site technical support, much time and money may be lost due to technical breakdowns. One of the major obstacle to optimizing computer use in schools has been the lack of timely technical support.

● Resource related issues and internet:

Rural schools usually face trouble with respect to the availability of IT related resources such as supporting infrastructure, uninterrupted electricity, supplementary resources like multimedia, projectors, scanners, smart boards, and so on. Despite being an integral component of the IT, internet is lacking in most rural schools. Most schools cannot afford the high fees charged by internet providers and even where there is internet, slow or erratic connectivity destroys the very essence and impact of IT.

IT INITIATIVES EDUCATION IN INDIA :

The government of India has announced 2010-2020 as the decade of innovation with special focus on IT enabled education and acquiring of IT skills for students. The motive of the national policy on education is to create an environment of integrated development for education and economic empowerment of rural students. Important initiatives and strides have been taken in the sphere of rural education:

- Computer literacy projects for teachers and students
- Mobile classrooms through IT buses
- E-Learning centers and kiosks for enhancing online education for social and economic change in rural society
- Community Telecentres to meet the needs of IT learning outside formal school setting.
- Bicycle-based connectivity in rural areas
- National award for teachers using IT in schools in the teaching learning process
- Development of IT curriculum
- Innovative „Rural Reach Program“ by Infosys for imparting first hand IT knowledge to children of grades 5-10 in villages
- Higher education IT initiatives such as E-Gyankosh, Gyan Darshan, Gyan Vani and various other distance education programs.

SUGGESTIONS :

Revolution in information and technology has reduced national boundaries to meaningless lines drawn on maps. In this scenario, education has been identified as one of the services which need to be opened up for free flow of trade among countries. India is developing as a knowledge economy and it cannot function without the support of IT. The gap between demand and supply of education has necessitated the government and institutions to formulate policies for more beneficial use of IT. In order to bridge the gap, it is necessary to evolve cooperation between public and private stakeholders. There is a need to focus on improving four aspects of IT - access, usage, economic impact and social impact. This paper makes the following suggestions for improving and enabling IT education in India:

There is a need for public-private partnership for resource mobilization for funding IT education in India

- To provide need-based IT Education in rural areas specific to their skill sets.
- To formulate policies to promote broad access to skills and competencies for learning and adopting IT .
- Provision of broad-based formal education of IT.
- To create awareness on IT Education .
- Give incentives to firms and individuals for encouraging involvement in continuous training in IT .
- Develop supportive infrastructure facilities such as electricity, internet, etc. Government should actively promote the usage of alternate sources of power to ensure a steady power supply to schools in rural areas .
- Computer recycling can be an ecologically sound alternative to the problem of computer shortage .
- Enlarge community participation for self-sustainability in IT application.
- Government and national education authorities should ensure availability of high quality internet access to schools and educational institutions .
- Government should ensure joint efforts by software companies and teachers for preparing quality content to support the curriculum and language diversities .
- To make ITs effective and integral tools of education, monitoring and evaluating must be a priority .
- The urban-rural division in terms of access, equity, and resources will continue to be the main issues that Indian educators will have to address as the needs of the learning community will change. Migration of rural Indians to urban areas is not the solution to the gnawing gap between the two regions. Rather, with health, education, a bit of infrastructure and livelihood opportunity, life in rural India may become better and more welcoming than that in urban areas.

CONCLUSION :

Information technologies are the result of knowledge explosion. These include hardware & software technologies and facilitate teaching learning process. Using Information Technologies learners are now able to participate in learning communities throughout the world. They are independent and free in choice of their programmes of study and access to the resources. They may learn collaboratively, share information, exchange their learning experiences and work through cooperative activities in virtual learning communities. Information technologies facilitate teaching learning process in more productive fashion. Similarly, the role of teacher is also different in new settings than in the conventional system. Teacher facilitates and guides the learners in their study playing the role of a coach or mentor. Now teacher is not at the center of the instruction and sole source of information as in conventional classrooms. He/she decides contents/experiences and/or activities, locates the resources and guides learners how to have access and utilize the information for required outcomes. In a nutshell, information technologies are restructuring teaching learning process to meet the International standards.

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