

Role of ICT in Making Teaching-Learning Effective in Technical Institutions

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ABSTRACT

The pace of change brought about by new technologies has had a significant effect on all walks of life worldwide. New and emerging technologies challenge the traditional process of teaching and learning. The purpose of this paper is to underline the role of Information and Communication Technology (ICT) in education in general and Technical Institutions in particular in India. As our country is taking big strides rapidly towards digitization to attain the status of cashless society on one hand and realization of the concept of Make in India on the other hand, the role of ICT in dissemination of education in Technical Institutions has become increasingly important. One of the changes it has brought about is the way how teachers interact and communicate with the students and vice-versa. Given the fact that higher education in India is plagued by the challenges of inadequate technology access and inequity coupled with economic considerations and technological know-how, it remains to be seen how ICT can actually help the students and how it can foster change in this aspect. As with any new process, ICT might cause anxiety and trepidation for some users. So we need to invest in a well-planned promotion and implementation strategy to properly teach and reassure students and teachers about the new process. Here technical institutions have an edge over other educational institutions as the users are much more familiar with the technologies being used.

1. Introduction

The demand for education in developing countries like India with a population about 1.34 billion, has skyrocketed as education is as an important bridge of social, economic and political mobility. India has innumerable challenges in terms of Infrastructure, socio-economic, linguistic and physical barriers for people who wish to access education. The increasing use of ICT in India has helped increase the country's requirement of technical education through part-time and distance-learning schemes. The concept of ICT refers to harnessing electronic technology for information processing needs of Education Institutions providing technical education using the computer and telecommunications-based equipment for storage, processing and dissemination of information. While ICT is an umbrella term that includes any communication devices or application, encompassing radio, television cellular phones, computer and network, hardware and software, satellites systems and so on, as well as the various services and application associated with them, such as video conferencing and distance learning. It is therefore, all embracing, that is, one need to be electronically educated and one major device for undertaking ICT is computer usage. No wonder the European commission says, the importance of ICTs lies in Technology itself than in its ability to create greater access to information and communication in under serviced population. Moreover it can be used as a tool to overcome the issues of cost, less number of teachers, and poor quality of education as well as to overcome time and distance barriers.

2. Conventional Education

Plenty of Educational Resources: Information technology makes it easy to access academic information at any time. Both students and teachers use Information

technology to acquire and exchange educational material. For example; teachers can easily provide visual and audio classes to their students using computers and broadband internet. This breaks the boundaries of accessing information, because the student will simply attend a lecture while not in a physical classroom. Information technology has the ability of speeding up information delivery, so this ability can be used in improving our technical education environment. With the implementation of Information Technology, costs of accessing educational material are cut down and it makes it easy for students to learn from anywhere. New technologies are changing the way we learn and they have also changed the process of teaching. Both teachers and students are using these new educational technologies to archive specific academic goals. For example; the increased use of internet broadband makes it easy for students to access academic information on time. Also teachers use this broadband internet to create and deliver academic data using videos and graphic illustrations.

Multimedia approach to education: Both education and learning are life time processes, they have no limit on when to start and stop. Education provides us with information, and then we have to learn and process this information for our own use. Information technology has changed the way we learn and interpret information. The use of audio-visual education helps students learn faster and easily. As opposed to text and blackboard notes, students get bored in this form of education. It is a human weakness, people do not want to read text for so long, they get bored, so the introduction of audio-visual technology in education, makes students enjoy what they're learning. Visual illustration using images on projectors helps a student understand the

concept, because some of these images are interesting and they look familiar to a student. Our brains tend to remember visual illustrations easily more than text. This explains why you can easily remember someone's face but fail to remember their names.

Instant Access to Educational Information: Information technology speeds the transfer and distribution of information. Students can easily access academic data using computers and new technologies like mobile phone application. IT experts have coded educational applications which can be used by students to access information very fast. These mobile phone applications are replacing some old methods like borrowing of books in libraries, now days students can use Library mobile phone applications to download books in form of e-books, so they have these books at any time which saves them time and helps them read at any time anywhere.

Online Education: With the introduction of online education services, students can learn from anywhere using internet. Such an example would be NPTEL (National Programme on Technology Enhanced Learning), a joint initiative of the IITs and IISc. Through this initiative, they offer online courses and certification in various topics. This has helped in spreading of essential education materials to all students across the globe. Online education is also being enhanced by the creating of mobile application which enables student's access education material via their mobile phones.

Full Time learning: Unlike in the past when learning was limited to a physical classroom, students and teachers could only access academic information while at school. Today, all that has changed, a student will access information at any given time of the day. It does not matter where they are or the time of the day is. Information technology has facilitated online education, so you will find a student in Africa will study the same course as a student in USA or India. And when it comes to getting jobs, all these students will have the chance to compete for the same job.

Group Learning: Information technology has helped students learn in groups and it has also helped teachers teach students in groups. In past, we used to have group discussions at school which required each member to contribute, however the shy students could stay away from these groups because of the fear of expressing themselves. Now with information technology, schools have created academic forums, where students can discuss about a specific topic with no fear of expression. They can also engage in video and text chatting. Another benefit of these online group discussions is that not all group members will be from the same class or school as it was in the past. Students from various schools around the world can be in the same academic group and share academic information. Let's look at a student in Africa joining a group discussion of students in Harvard University, the information exchanged will be beneficial to this student.

Long Distance learning: Information technology enables students across the globe to study from anywhere through online education. This has been possible due to the wide spread of cheap broadband internet in both developed and non-developed countries. Unlike in the past, when some courses used to be provided in developed countries, so for a student to study those courses they had to go through the hassle of moving from their home country which was to expensive. Now days, a student can have access to these courses online. Many universities have opened their educational curriculum to the world. So at a small fee, a student can be part of that university. These students do the same exams and are marked by the same teachers.

Online library : Internets support thousands of different kinds of operational and experimental services one of which is online library. We can get plenty of data on this online library. As part of the IT curriculum, learners are encouraged to regard computers as tools to be used in all aspects of their studies. In particular, they need to make use of the new multimedia technologies to communicate ideas, describe projects, and order information in their work. This requires them to select the medium best suited to conveying their message, to structure information in a hierarchical manner, and to link together information to produce a multidimensional document.

Better accesses to children with disabilities: Information technology has brought drastic changes in the life of disabled children. IT provides various software and technique to educate these poor peoples. Unless provided early with special training, people profoundly deaf from birth are incapable of learning to speak. Deafness from birth causes severe sensory deprivation, which can seriously affect a person's intellectual capacity or ability to learn. A child who sustains a hearing loss early in life may lack the language stimulation experienced by children who can hear. The critical period for neurological plasticity is up to age seven. Failure of acoustic sensory input during this period results in failure of formation of synaptic connections and, possibly, an irremediable situation for the child. A delay in learning language may cause a deaf child's academic progress to be slower than that of hearing children. The academic lag tends to be cumulative, so that a deaf adolescent may be four or more academic years behind his or her hearing peers. Deaf children who receive early language stimulation through sign language, however, generally achieve academically alongside their hearing peers

3. Digital Classrooms

Today we have web-applications as well as phone applications like Piazza, which is based on the concept of a digital classroom. This provides both teachers and students with tons of conveniences mentioned above. Piazza allows a teacher to create courses, post resources, create quizzes, live video lectures, discussion rooms where all students can discuss any topic (even anonymously!) and much more. This allows students to get notifications about new assignments, attend lectures and take part in class discussions without actually being physically present in a class. And this also

makes it easier for the teachers to analyze the performance of the whole class as well as per student much more efficiently by just looking at their activities and participation in class activities. It saves time wasted while taking attendance, or maybe when the whole class has to wait because of a few students who don't get the concepts in the very first attempt and other activities that may break the flow of a teacher during a lecture or distract other students in a physical classroom.

But it also has its cons. This doesn't allow a teacher to maintain a personal touch with the students and a teacher would never know if a student was actively participating in the virtual classroom during the delivery of the lecture.

4. Online Campus

Here we'll be taking example of TCS iON, a IT-as-a Service solution that is used by manufacturing industries, educational institutions and exam boards. TCS iON is a strategic business unit of Tata Consultancy Services. It has transformed the way normal activities take places in an education center. Take for instance getting a book issued from the library doesn't mean finding the right book, standing in queues to get them issued, and then bring them back if you want to get it re-issued. With the help of TCS iON all you have to do is simply login with your account, reserve the desired book, and that's it! You can reserve books, get them issued if it's available, extend its returning date if other student hasn't reserved it earlier (maintaining fairness), all just by clicking some buttons. And you are automatically fined if you are late. All this helps the librarian as well as students to save so much time and hassles. But this is just one such thing TCS iON can do, others include paying fee online, register for courses in your college online, get a track of your results and a lot more, and hence, creating a virtual institute on your computing device – an online campus.

5. The Game Changer

But all of these facilities that IT provides to the education industry requires one basic thing – COMPUTER. This is where Google's Chromebooks come into action. These computers run on Google's Chrome OS, and are available at very competitive prices which most of the educational sectors and students can afford. Google has stepped into the education market in a big way with Chromebooks in public schools. As of January 2018 there are 25 million students using a Chromebook at school, 30 million students using Google Classroom, and 80 million using G Suite for Education. While most Google educational services (including Chromebooks) are used by students and teachers in the U.S., Google is also seeing growth in the U.K, Canada, and many other countries. With partners like the British Museum and the National Trust for Scotland, more than 500,000 British students have been able to use Google Expeditions for virtual tours of places a school district could never afford to visit. Google is serious about the education market and providing

products that meet the needs of school boards, teachers and students alike.

Recently Microsoft also tried to do something similar by introducing a slimmed down version of their Windows OS, called Windows S, which was targeted on students mainly.

6. Challenges

New technologies are changing the way we learn. However, it is hoped that ICT can transform the educational scenario in the country. But then, can it address these needs and perform multiple roles in imparting technical education to benefit all stakeholders? There is a growing apprehension that ICT can transform India towards becoming a knowledge society. The penetration of ICT systems in higher education institutions is extremely poor according to a recent survey of accredited colleges by UGC which reveals shortcomings in IT infrastructure whereas situation is somewhat better in technical institutions. As the majority of Indians living in rural areas have poor access to internet, it is necessary that they are exposed and trained in basic computing skills and ICT utilization. Moreover, the low awareness on IT literacy is also a major challenge India faces in realizing ICT implementation in education. The major challenge is that Information Technology comes at a cost, so those who cannot afford the price tend to have difficulties to benefit from the benefits and opportunities of ICT in education.

7. Conclusion

The specificity of individual subjects makes it necessary to adapt methods of different ICT-tools used in education. Online courses and the distribution of content over the Internet will significantly impact education in the coming years and decades. The traditional teaching model has lost its monopoly in the process, content, methods and learning objectives. The current model of the teaching, which combines teaching and research in most cases, will be unsustainable in the next ten to fifteen years. Rather than providing information and lessons, the educational institutions will become a place of consultation and informal personal contact between students and teachers. More important than before will be practical exercises which cannot be provided online. As in any learning process an important issue is the attention paid to student evaluation. For an objective and correct evaluation challenges in an ICT-aided learning environment are great. The integration of ICT in Technical education is a central matter in ensuring quality in the educational system. There are two equally important reasons for integrating ICT in Technical Institutions. On the one hand pupils are familiar with the use of this technology and on the other hand since all jobs in the society of the future will be dependent on it, and ICT must be used in teaching in order to improve its quality and make it more effective. It was therefore recommended that ICT education must be strengthened at the base level of our education system.

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