Teaching Through Technology : Boon or Bane

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Today we live in the age of information technology. Undoubtedly, technology has crept in almost all walks of life. The field of education is no exception. In the first half of the twentieth century, the industrial revolution brought transformation in every field. Time is a witness to the changes shaping from slate, blackboard, chalk to the use of various electronic and digital devices of mass media. The century saw not only the explosion of population but also the explosion of knowledge and technology. Whereas the population explosion highlighted the interdependence of people of the world, the electronic revolution completely reshaped old notions of education. Since then, technology in education has been functioning at three levels:

(a) Preservation of knowledge (in forms of books; audio and visual recordings and so on)
(b) Transmission of knowledge (role of radio, television, video conferencing, internet and the like)
(c) Advancement of knowledge (collecting data, recording data, advance research mechanisms etc.)

In the word of Gases, use of technology in education "has to be seen as part of persistent and complex endeavour of bringing pupils, teachers, and technical means together in an effective way." (Rao, 44).

If one tries to investigate, in earlier days the primary concern of a teacher was to impart information to the student, primarily in lecture format. The students would sit in class, listen to the words of wisdom, and take notes. Those students who took themselves to be intelligent read the assigned text. However, the axis has shifted in modern times and teaching today has become learner centered. Nevertheless, competent and efficient teachers are the back-bone of any institution. It is a teacher who has a special responsibility of awakening the creative sensibility of the learner as well as to formulate different methods so as to impart quality education. It is said that teachers have the potential to make or mar the nation.

Before I take up this discussion further, it is important to understand the nature of instructional material that technology provides. Ellington (1987) has classified it into seven categories:

(a) Printed and duplicated materials;
(b) Non-projected display materials;
(c) Still projected display materials;
(d) Audio materials;
(e) Linked audio with still visual materials;
(f) Cine and video materials;
(g) Computer-mediated materials.

Broadly seen, Ellington's classification, with reference to technology today, can be clubbed under two categories on the basis of their production and utilization: hardware material and software material. Hardware materials are the electro-mechanical equipments such as overhead projectors, slide projectors, tape recorders, motion pictures, television, computers and so forth. They have their origin in physical sciences and applied engineering. Hardware material is based on the concept of service. Therefore, they transmit, amplify, distribute, record and reproduce stimuli materials providing a dramatic increase in the teacher's impact on the learner. Software does not have a material

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form and are stored or used with the help of hardware. Hence, software materials, more or less, owe their origin to behavior sciences and their applied aspect concerning psychology of learning. It includes programmes and data produced with the help of newspapers, magazines, flash cards, educational games etc. which are intangible and loaded or played in electro-mechanical equipment.

Institutions of repute are supposed to integrate learning through technology along with the traditional practices. It would not be out of place to mention that as much the use of technology so good the reputation of an educational institution. Hence, a plethora of technological aids like radio, tape-recorders, educational television (ETV), multimedia-laboratories, computer programmed learning, virtual reality, internet and so on, are being used. It has facilitated not only classroom teaching but also online learning and eLearning. In other words, computer technology has provided students and teachers with unprecedented opportunities to transform the teaching and learning process creating an environment by the simplest uses to the most sophisticated. In the words of Schwarz, everyone wants "to experience warmth, human interaction, the thrill of discovery, and solid grounding in essentials: reading, getting along with others, training in civic virtue. Only a teacher, live in a classroom, can bring about this inspiration ... Yet, everywhere [you can] hear parents and principals clamoring for interactive computer instruction."

All this has come to us making the educational environment very exciting with all kinds of gizmos. India seems to be is all set to touch the international standards of education with the help of technology. The question that incessantly stings the mind is that — Is technology an extension of the teacher? Or is it mechanically replacing a teacher? Is technology effective in the sphere of education? Is total teacher's replacement possible?

As far as hardware material is concerned, it works as a tool — an extension of the teacher. For example, a radio. A radio broadcasts voice and generally the programmes are oriented towards creating a sense of intimacy between the presenter and the listener. As a result, a radio is often perceived as a 'friend' with voice. In a country like India where there is diversity in ethnicity, food, language and society, geography and economy, radio has proved itself simple, useful and economical as technological tool used for the purpose of education.

Similarly television is being called as the 'electronic blackboard of future' by experts. The first pilot experiment in this respect was carried out by BBC in 1952. From that time onwards, the use of television for education has progressed rapidly. Educational television with channels like Gyan Darshan, Discovery, Asheville Educational Television, Nasa TV etc. in India and abroad have proved that ETV is capable of making students learn more effectively. Audio and visuals that a television provides definitely promotes the development of a pupil's power of observation, insight, practical understanding of lessons and reflective thinking.

Considering computers, this tool is really very intelligent. It operates at amazing speed and accuracy. In teaching, a computer has been establishing its merit in the following three areas:

- Computer Assisted Instruction (CAI)
- Computer Assisted Learning (CAL)
- Computer Managed Learning (CML)

CAI provides information on a topic and raises questions and accepts answers. If the answer is correct, next information is generated and then another question asked. This process is continued until the study of the topic is complete.

CAL covers a range of computer-based packages, which aim to provide interactive instruction usually in a specific subject area. It is a process which allows a student to search the area in which he/she feels short of knowledge or facilitates a student who wants

to explore new areas of learning. While CAI uses drill and practice CAL is investigation and a process of searching more knowledge. The software can also be used to provide interactive video cassettes and disks.

CML, is again a bundle of software packages which includes generating tests from banks of questions, marking the tests generated, analyzing the results and keeping records of students' marks and progress. In other words, a student gives a test based on the designed questions. The test is evaluated by the computer and it guides the student to do the appropriate.

If one takes cognizance of the above examples of technology, hardware material works as tools to enhance the effect of a teacher and teaching thereby providing an extension to his/her persona. On the contrary, computers and internet is fast growing itself as a substitute to an alive, breathing, responsive teacher. The vitality of a teacher is getting replaced by the virtual reality created by the computer. There has been a great boom in this field in the late 1980s and 1990. Virtual reality creates a computer simulated environment (real or imaginary). In programmes like Chatterbot, a virtual robot interacts with people using artificial intelligence and solves problems of interpersonal communication. However, communicating with a robot or people on internet is not the same as face-to- face conversation. Besides, the "virtual community" of the Internet is populated by people with false identities, people with inaccurate information, people who express themselves quickly and with little reflection or sense of accountability" (Schwarz). As far as entertainment goes, virtual reality is thrilling but in the case of teaching and education, it should not make the actual human factor get disappear from the scene. Such computer programmes have to be monitored by tech-friendly qualified teachers. It has to be remembered that the uncontrolled use of technology without examining its long-term benefits and potential problems is not something that should be allowed to happen in the field of education.

Seeing it from the students, power point presentations and other lecture materials in digital format has enabled faculty to make their materials available to students through the internet which again has raised many problems. Students access this material and even if they are regular enrolments, they develop a tendency to skip lectures since all digital lecture material is freely available to the students. Moreover, many students use software that has been acquired in an illegal manner without a second thought. They duplicate the software advocating for personal use without realizing that this is an act of stealing.

Moreover, actual classroom teaching builds a student-teacher relationship and vice-versa creating an environment of warmth and affection. On the contrary, electronic gadgets cannot register a student's psychological or emotional reaction; they fail to provide the human touch. Once the process of learning from a fellow person has been automated to something mechanical many things get lost. Automated grading loses the ability to see just where a student went wrong, or what the student was trying to achieve in an answer. Online courses remove the ability to deal with truly great teachers in a personal way, and it also removes the ability to truly interact with other students. Therefore, use of technology alone becomes boring.

Another perspective in teaching-learning is that more than half of the population of teachers in India is still not technology friendly. Barring the metropolitans, many teachers, even today, are still grappling to learn computers and other educational tools. Actually seen, most teachers are not aware about website resources, the inspirational softwares (that promote visual learning, brain storming of ideas and organizing skills), testing softwares, programmes made for teaching material production etc. Since there is passivity in the attitude of the teacher, student motivation

in respect to technology also suffers. Therefore, though there is a considerable rise in numbers yet it is still a far fetched dream to build institutions where teachers have the capacity and ability to integrate technology with teaching.

Another fact worth considering is that still rural India is contributes two-thirds of the total nation's population. To reach rural and remote areas, and to overcome the shortage of qualified teachers, the government had launched EDUSAT (a direct educational satellite transmission) way back in September 2004. It has been successful to some extent but the total effect of this exercise has not reached the grass-root level. The reason has not only been improper infrastructure but also lack of co-ordination among the relay centers and education institutions like school and colleges. The educational institution in the rural sector also lack professional skill and acumen to handle and maintain such sophisticated machines. Another handicap that takes the toll is power supply. For running technology, the foremost requirement is uninterrupted electricity. Rural sectors are neglected in this respect. In addition to it, fluctuation is another factor responsible for making such technological equipment dysfunctional.

As a personal experience at the higher education level, teaching with technology in multimedia laboratories in rural sector in Haryana was undertaken to teach communication skills. Some of the findings of this experiment are:

(a) At the onset of the semester course, students were not found familiar with computers at all.

(b) The students seem to be reluctant for using technology.

(c) Almost for the first two months, the students were found deficient and confused about the whole exercise. They could not understand the digital lessons. Most of the students did not have computers and internet at home.

(d) Technology could not completely attract the students and visual lessons distracted the concentration required in a learning environment.

(e) Follow teachers did not have the knowledge about the entire educational programme. Therefore, motivation among teachers suffered thereby causing a counter impact on students.

(f) The role of the teacher was unspecified in this tech-classroom. This decreased the value and effectiveness of the digital teaching material.

(g) While playing a digital lesson the teacher could not intervene to explain the lesson.

(h) Students could not be active participators during the programme. If the lesson was paused to facilitate the learner, it lost its overall effect.

(i) Monitoring students in their separate cubicals is a tedious task for the teacher. Besides, eye contact is not the same as in a conventional classroom.

(j) The computer is not originally creative. The settings of the programme were totally dependant on the teacher or the learner.

(k) Many programmes did not address the actual life situation and needs of the learners.

(l) Fellow teachers were not well trained to use inspiration programmes, find resources of webbing ideas, task specific websites, lesson planning e-tools and so on.

(m) Shortage of power left the teacher unarmed and the class at a stand-still.

(n) Many equipments and computers got damaged or malfunctioned due to fluctuation.

Some suggestions:

- Students should be exposed to technology gradually from starting from their school education. The government is taking necessary steps to ensure it.
- The time-table in schools and colleges has to be in tune with the broadcast.
- Co-ordination between the organizing agencies and administrative authorities should be strengthened.
- Services of professional educational planners and trainers should be taken to train the staff and design syllabus centered programmes addressing the needs of the learner of the area.
- The teachers need to provide a preamble before a digital lesson/ programme is played or broadcasted and also make a follow-up activity or task.
- There is definitely a need to motivate and monitor the learner continuously.
- The fear factor towards the use of technology has to be peeled off judiciously elucidating the strength and weakness of technology.
- Technology has to be used as a tool in the teaching-learning process for accessing information and strengthening the teacher and not as a total replacement of a teacher.
- Research in this area is required to evaluate the actual state of affairs and see how far technology has been a boon or bane.

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There is no purifier in this world like knowledge; He who perfects his practice of selfless action finds that knowledge imbibe in due time. Burning fire reduces the wood to ashes; Even so does the fire of knowledge that reduces all ignorance to ashes

Srimad Bhagvad Gita