

A Constructive use of Technology (ICT) in Teaching –Learning Process

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Abstract— Nowadays usage of technology can be seen in almost all fields. Technology has become a vital part of our life. Education is a socially oriented activity and the standard and merit of education has traditionally been linked with strong teachers who have prominent degrees of personal contact with learners. Technology can assist the teaching learning process in several ways and leads to more student-centered learning approach. But as the world is rapidly progressing towards the world of digital media and information, the use of technology in teaching-learning process is becoming more and more important and its significance will continue to grow and develop further. In this paper, the findings regarding the use of technology in teaching-learning process are brought forward.

Keywords— ICT, Learning environment, student-oriented, teacher-oriented, Teaching-Learning process.

I. INTRODUCTION

ICT now has become the essence of modern society. ICT is the blend of ‘computers and computing related activities’ and the other technologies which supports them. In other words, it is the combination of ‘Information technology’ with communication technology.

The field of education has been affected by ICTs, which have unquestionably affected teaching, learning, and research. A great deal of research has proven the benefits to the quality of education. ICTs have the potential to innovate, stimulate, elaborate, and deepen skills, to motivate and engage students, to help in relating the classroom experience to work practices, create economic sustainability for tomorrow’s workers, as well as intensifying teaching-learning process.

Earlier, in traditional Learning Environment great significance is given to the class room delivery of lectures with very less thoughtfulness and sensitivity towards students with different cognitive/learning styles. It is teacher oriented or teacher centered approach of teaching and learning and this result in deficiency of students’ interest and higher level of habitual absence in classrooms.

But with learner-centered approach it is possible for the teacher to pay particular attention on each student’s learning requirements and at the same time it gives more self-freedom to the learner in terms of the level of engagement with the learning environment and the learning material. This approach allows the teacher to engage in a dialogic process with peers, tutors/lecturers, experts etc. This type of teaching process motivates and encourages deep-learning involving analytical evaluation, awareness of a considerable knowledge required and gives the learner the potential and artistry to put knowledge obtained into practice.

II. ICT INTENSIFYING THE TEACHING-LEARNING PROCESS

ICT has offered various ways to strengthen the teaching learning process. Conventional or traditional teaching has always been focusing the content. Since many years the courses have been written around textbooks. Teachers have taught through lectures and presentations. But today the things have changed. Today we have internet. With the use of World Wide Web (www), information is readily obtainable from numerous sources. Much of the information students gathered over a period of time attending lectures or seminars can be easily acquired with a touch of couple of buttons on any search engine within a fraction of seconds. This notable progress in the development of knowledge and technology have given student’s access to a large amount of information directly over the Internet whereby acting as a building block of their future knowledge - structured, logical, indexed and affordable content, resources and instruction available, round the clock.

By using this process of acquiring knowledge and information makes students more confident and they can have control over their own learning process in/out of their classroom. Therefore it becomes necessary to concentrate on the learner or their learning process empowered by technologies in-build within existing learning environment.

In order to assimilate the technology effectively into the classroom, it is important to understand the current trends in this area.

A. Flipped Classrooms

A flipped classroom is one in which students try to learn important information at home on the computer through videos and recorded lectures and the students dig in to explore the concepts and understand and then complete the activities in the classroom. This idea of a flipped classroom originated when two high school teachers in Colorado realized they were able to record presentations and post them online for sick students who were not able to attend the class. When the students missed the class, these teachers use to share their lectures and presentations online for such students to access at home. Momentarily, the videos/presentations gained popularity and started to spread. This led to the creation of the flipped classroom.

In this process of flipped classroom, the teacher has to create presentations/videos and lectures and shares them with the students online. The students at home will go through the videos and try to understand and explore the concept before next day coming to school. In the classroom the teacher only has to act as a guide and help the students to explore the concept more in depth. In actual execution, teaching and learning in a flipped classroom is more complicated. The teacher in a flipped classroom must set clear expectations and should be ready to take firm steps if students are not completing the required work at home. Learner in a flipped classroom requires taking initiative to work at home. In this practice parents, teachers, and students must work as a team in education.

B. Social Media in the Classroom

Social media is a digital tool which can be used to engage students more in classroom as the students are already fluent in using it. For example, a Facebook group can be created for each class and one can post the assignments, remind the students about deadlines for submissions, and make announcements. The teacher can post videos/presentations related to the lectures. Parents also can have access to the site so that they also remain updated with the classroom activities. Like Facebook, Twitter also offers a quick way to post class announcements and reminders as well as real-time information. The class can track information on a topic with the help of Twitter. Since students are already using social media away from the classroom, integrating it into the classroom helps students learn best practices for social media and offers an interesting new twist on lessons.

Social media can be a great tool to teach many different subjects, but student must know how to use the tool and stay safe when doing so.

C. E-learning

In E-learning, the delivery of a training program or education program is done by electronic means outside of a traditional classroom. It involves the use of a computer or electronic device (e.g. a mobile phone) in some way to provide training, educational or learning material. E-learning can involve a greater variety of equipment than online training or education, for as the name implies, "online" involves using the Internet or an Intranet. CD-ROM and DVD can be used to provide learning materials. It is interactive in that you can also communicate with your teachers, professors or other students in your class. Sometimes it is delivered live, where you can "electronically" raise your hand and interact in real time and sometimes it is a lecture that has been pre-recorded. There is always a teacher or professor interacting /communicating and grading your participation, your assignments and your tests. E-learning overcomes attendance, travelling and timing difficulties.

D. Mobile-Learning

Mobile learning (or "m-learning") is a revolution in E-learning. It is the education via the internet or network with the help of wireless technological devices such as mobile phones/smartphones, tablets etc. The students can access educational apps, and can learn anytime, anywhere. In other words, it is very flexible. It is learning in an effortless manner as it is more convenient, affordable and spontaneous. Mobile learning assists educational institutions to impart knowledge and educational content to students on any platform, anyplace and at the time of need. Students use mobile applications and tools to complete and upload assignments to teachers, download course instruction and work in online social groups to complete tasks. Normally, students use 3G- or 4G-enabled devices to connect to the Internet, rather than traditional broadband access as there is less contention for access through these non-traditional devices.

E. Cloud-based-Learning

Cloud-based learning is the use of latest technology of online learning. The learning material is available in the cloud. In other words, the resources are stored in a virtual environment and one can access them through the use of various forms of web-enabled devices.

This is nothing but- storing and accessing information and various programs over the internet instead of accessing it or keeping it in the computer hard drive.

By adopting this technology the students and teachers are able to interact and get connected through web-based portals and get the latest and updated information as they remain online. Cloud –based learning has currently eased and revolutionized education.

F. Collaborative learning using ICT

Collaborative learning is a technique where the teacher make students work together in groups to achieve a common goal as learning together also increases learning outcomes. Collaborative learning using the digital technology maximizes learning. Various ICT solutions offer us with tools for collaboration in the classroom as well as in distance courses. Here, students become more active in teaching learning process. As students like and prefer to learn in groups with their peers, they also prefer learning by doing, learning through discovery. Students get all the necessary information required in their studies from different sources online. They can also integrate information collected from various sources and re-create it. All this leads to collaborative learning where the students interact with each other and participate in collaborative activities. Students help each other and with the help ICT it becomes easy for them to work together with the computer rather than with pen, pencil and paper. With the use of technology students communicate, explore and socialize the learning with ICT and thus gears up the collaborative activities using ICT.

G. Project based learning leveraging ICT

Project-based learning (PBL), offers several benefits to students as well as teachers. In this teaching learning approach the students are made to work in groups and are assigned a project through which they will gain new knowledge of discipline/disciplines sometimes addressing a real-world problem or issue. It maximizes the learning outcomes as learning becomes more interactive. The groups of students explore new ideas, investigate the new findings and find solutions to the problem and then they create presentations to share with the rest of the class about what they have learned. While doing all this, ICT can play a vital role. It empowers the students. Students can search on Internet about their topic at their own times and can get relevant ideas. Finding and managing the information becomes easy with ICT. It is also easy for the students to forward their findings and communicate with each other through online forums or Facebook or Twitter or can use e-mails, e-forums, wikis and blogs.

They can use tools such as word processor, spread sheets and databases for documentation purpose, analysing data and keeping track of collected information. They can also make use of the online journals to support their findings and to develop new ideas. They can also create websites. They can prepare presentations on computer, and display it in the class by using a projector. With the use of ICT, students become more motivated to learn and get more involved in the subject they are studying. They develop technology-skills and produce higher quality work.

H. Smart classrooms and Smart boards'

Smart classrooms and Electronic boards set a perfect learning environment amongst the students in the classroom. It enriches the classrooms in various ways by providing maximum interaction of the students, collaboration and thus creates excellent learning setting. Smart classrooms can be described in terms of technology as enhanced learning spaces having work environments equipped with laptops/computers, information devices, and various sensors. It includes projector and projection screen, laptop connection cables, touch screen control system, sound system, DVD, microphone, document camera, USB extension cable for USB drives, Wireless Presentation clicker/Mouse etc. All smart classrooms are equipped with video projectors to laptop/resident computers. All this software and hardware installation allows for the automated capture of audio, video, slides, and handwritten annotations during a live lecture, with subsequent access by students. Technical support is also arranged by contacting the Support Centre using the telephone made available in the classroom. These classrooms also have controlled lighting system which adjusts the lights. Video conferencing can be integrated in the classroom to connect with the remote students and also for online lectures from remote places. It helps in enriching the classroom experience and also in expanding the nature of content used in learning. The Smart boards provide flexibility to display photos, maps, graphs, games, illustrations, and videos. They have tools to support different learning styles- visual learners can watch the projected visual elements, audio learners can listen and have discussions; tactile learners can touch and interact with the board as it has touchscreen capabilities. Here the learners have an opportunity to share and participate in the teaching learning process. It is more interactive and the students can grasp the subject through touching, drawing, and writing. The learner is always free to participate and contribute. The boards also assess the students and they can get immediate feedback.

The smart boards also allow students and teachers to easily access online resources.

A classroom supported by Smart boards totally transforms the way teachers impart knowledge to students and at the same time makes the learning process easy for the students. It is easy and simple to engage the students and they gain better understanding.

I. Augmented reality techniques

Augmented reality techniques can be used for simulation modelling and visualization. With Augmented reality techniques the teachers can extend the learning experience of the students well beyond the walls of the classroom. For example, with augmented reality the teacher can keep the entire Solar System on the table in front of the students in 3D to interact with. The classroom environment becomes more interactive, pleasurable, and productive. The students can build personal interpretations, can create situation specific understandings and can find their unique discovery path with computer generated 3D environments and models. Teachers in a way motivate the students to learn and enhance their educational realism-based practices. By incorporating augmented reality in the lectures teachers can capture undivided attention of the students. For instance, a teacher in a mechanical workshop can show a 3D model and behaviour of heavy metal sheet when hydraulic pressure is applied and released while bending. By simply scanning the students can access any augmented models. Also, students can access the websites directly from augmented applications. With this experience the students are able to retain more knowledge that they have gained during learning. Hence, by creating immersive learning experiences within the physical environment, the teachers provide a novel and potentially transformative tool for teaching and learning.

III. CONCLUSION

There has always been a concern of reach and access to education in all segments of society. But with Information and Communication technologies the flexibility of delivery of education has increased, hence learners can access knowledge anytime and from anywhere i.e. regardless of time and geographical barriers.

There are large variety of software tools, applications, media and interactive devices which promotes inventive, aesthetic, experimental, analytical and problem solving abilities and accountability in students and teachers. This prepares the learners for lifelong learning as well as improves the quality of learning and they may raise themselves to different levels. Hence, ICT in teaching-learning process enriches the learning environment of the students and enhances their motivation to learn.

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