

Information Technology in Classrooms

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ABSTRACT

Information Technology has not change only the way of communication and conventional working process of an organization but it has a great impact in learning of students also. Usage of Information Communication Technologies (ICT) in classrooms has changed the way of conventional teaching. In conventional learning processes, Information is represented into text and image formats only but using ICT, we are now able to add more data types for the information like, audio, video, graphics and animation. Now our classrooms are equipped with various peripherals like projectors, whiteboards and iClickers besides conventional chalk, duster and blackboards. Computer Assisted Teaching has given birth to some more new terminology like, Computer Assisted Instruction(CAI), Computer Added Learning(CAL), Computer Based Education(CBE), Computer Based Instruction(CBI), Computer Enriched Instruction(CEI), Computer Managed Instruction(CMI), Web Based Training(WBT), Web Based Learning(WBL) and Web Based Instruction(WBI). The portable and handheld devices like Smartphone and laptop computers are now performing the computation on move and those are gateways for the Internet World. Internet has significantly changed the way of learning and the philosophy of “any time”, “any where computing” of mobile computing is now a norm for the students “learns from any every, anytime”. This paper is examining the impact of ICT in classrooms.

Keywords-ICT, CAI, CAL, CBE, CBI, CEI, CMI, WBT, WBL, WBI.

1. INTRODUCTION

Information Technology facilitates us about the storage of data and its retrieval when it is required. Information may take various forms like text, audio, videos, graphics, images and animations. These data types can be easily stored into digital formats on storage media. To handle these data into effective manner we have several software for the processing of data. In earlier, availability of data was not ensured when someone was performing moves but the capability to access the data on move is now a norm. Handheld devices are equipped with Internet facility and we are now able to store our data on clouds. Storage of data on clouds and accessibility of Internet services have made the exchange of data easier. Internet is a collection of computers which are internet connected with each others. Information's value is dependent on the following factors: source of information, user of information and the time. Information must come from trusted source to targeted audience

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in time is the principle of communication. Late information has no meaning. Various tools and websites are available on Internet to assist the students in learning process[1,2,3,4,12,15].

ICT tools are not only assisting the students but also providing various supports to the teachers also. Drawing a complex diagram on blackboard is a time consuming process and once it is deleted and in future its reference is required learning leans on imagination. The power point presentation is very helpful for the students and teachers. On demand slides can be referred and it is both efficient and convenient rather than redrawing the same figure again on the blackboard. Information in audio formats helps the students in learning a new language by helping them in correct pronunciation. Several Biological phenomena where sound is required can be experienced easily. Images, animations and graphics are collectively can be used to describe the various concepts of Science, Geography and mathematics. Smartphone are capable enough to support several tools and messaging apps which can be used to share the contents on various topics among the users.

Communication can be done in between parents and schools by using these tools and monitoring can be also implemented for the students which are beneficial to both parents and teachers and it does not require personal attention [20-24].

2. CONVENTIONAL LEARNING PROCESS

Conventional learning was focused on the contents which were the part of syllabus and contents were taken from referenced books only. Teacher was just a content expert and used lesson plans and tutorials to evaluate the performance of students in the subject. Learning was entirely dependent on books and teachers. Purchasing several books of a subject is very costly and other factors involved from teacher's end may introduce problems for students in learning the subject. Commonly those problems were lingual limitation, way of teaching and unavailability of teacher. We cannot expect everything from teachers. Some problems may be also associated with books. These were the barriers and it needs a solution. Real life examples can be used to explore a concept and a solution can be also searched from real life for a problem. Teaching is a science with art. In classroom a teacher has not to deliver the content only but he has to ensure that every student understands the subject. Student cannot be kept in indeterminate state. Sometimes due to hesitation students do not come forward with their problems to teachers and they remain into indeterminate state. Sometimes students are physically available in the class but logically absent in such scenario an alternative is required for the students to learn the subject when they want. Such type of freedom is always unavailable in conventional learning.

3. CHANGES REQUIRED IN CONVENTIONAL LEARNING

In the last section we have explored limitations of conventional learning. Changes are required in conventional learning process such that "when" and "where" a student wants can open the gateway of learning. A shift is required towards a new direction to make the learning easy for students and it should be not entirely dependent

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on the teacher. A platform must be provided to the student where he can explore something more which is beyond the boundary of text books. A motivational factor is always required to accomplish this so called change. A bridge can be introduced in between students and the called change with the help of Information and Communication Technologies. ICT is assisting the students to eliminate these types of limitations from the learning process. Student centered learning supports in knowledge construction. ICTs are used to transform a teacher centered learning to competency based learning. Use of ICT in education also affects the way students learning. The following points are particular forms of learning.

3.1. Students centered learning with the help of ICTs, it is possible to introduce options where learning is not teacher centered but student centered. Student centered learning promotes the followings:

- Selection of web resources as study material.
- Option to select the experts from whom a student wants to learn.
- Process will become problem – based learning.

3.2. Supporting knowledge construction

Creating interest into the subject is the major responsibility of a teacher. If a student takes interest the subject, he also starts exploring the subject which further helps into knowledge construction. As earlier discussed a teacher may has some limitations due to which a student is unable to develop interest into the subject. Similarly books have its own limitations; no one can guarantee that same book has similar effect on every student.

4. ‘When’ & ‘Where’ to learn is a Choice

In conventional learning process there is no any option like ‘when’ and ‘where’ to learn. Students get limited contact hours with their teacher with predefined way of teaching and assessment. ICT is removing all these boundaries.

4.1. Any place learning Web resources can be accessed from anywhere and this facility is enabling the students to learn from anywhere. There are several institutions which are providing the facility of distance learning. In earlier days, in distance education, books and notes were provided in the hardcopy. Latest technologies are offering facilities where all the materials are in digital formats which can be accessed by handheld devices and the interactive platforms are providing to connect with the experts which are remotely located. Progress of a student can be easily examined by the online tests. Students may put their doubts before the experts in the language in which students are feeling good.

4.2. Any time learning Institutions are offering facility to select attend the online lectures in the time slot selected by the students from 24x7. Offline options are also available where students can watch the video

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lectures and can refer the digital contents like power point slides, animations, and eBooks. Students can participate in the offline quizzes of the subject also.

5. LEARNING WITH COMPUTERS

Learning is now a process which can be executed outside the classroom and with the help of those experts from whom a student wants to learn. Internet and computers are major actors of this activity when someone talks about e-learning (Electronic Learning). This section is exploring various ways and methods of such of learning [15-24].

5.1. Computer Assisted Instruction (CAI) It is a programmed system where computer provides instructions to the learners and uses online or offline videos , images, graphics and animations to explore the subjects. Assessment may be done by the same system or the system may redirect the learners to other websites. The CAI programs use tutorials, drill and practice, simulation, and problem solving approaches to present topics, and they test the student's understanding. Typical CAI provides, text or multimedia content, multiple-choice questions, immediate feedback, notes on incorrect responses, summarizes students' performance, exercises for practice and Worksheets and tests. Types of Computer Assisted Instruction Various types of CAIs are as:

- Drill-and-practice
- Tutorial
- Games
- Simulation
- Discovery
- Problem Solving

5.2. Computer Added Learning (CAL) The computer-aided learning program is an attempt to make the content of textbooks easier, interactive and more stimulating. Researches show that some of the contents, irrespective of the subject, are difficult to comprehend. In CAL, computers are used as a medium of teaching. The main task of the program is to develop interactive education software, based on the specified curriculum. CAL materials can be used as supplementary tools in teachers' training –a self-learning tool for teachers and learning facilitation tool for classroom teaching. The material is seen to improve teacher's teaching skills while simultaneously allowing students to better grasp difficult concepts.

The basic objectives of CAL material are:

- To facilitate transition from the teacher-centered classroom to a more interactive one.
- To make the class more interactive and engaging.
- To ensure conceptual clarity and better application.
- To increase teachers' understanding of the lessons.
- To create a self-learning provision for both teachers and students.
- To familiarize the students and teachers from rural communities with modern computer technology.

5.3. Computer Based Education (CBE) Computer Based Education, including computer assisted instruction and computer based monitoring, has many characteristics that can enhance schooling for learning disabled children. Of course many of those same characteristics can help non-disabled children, but the learning disabled may need educationally sound techniques even more than the non learning disabled children if they are going to experience success.

5.4. Computer Based Instruction (CBI) Computer Based Instruction (CBI) is a teaching approach that integrates computer software programs with other teaching materials in the classroom. Other terms used for CBI are: computer-based training, computer-assisted instruction and computer-assisted learning. In many ways CBI can be used in the classrooms or as standalone learning tools. Teachers use CBI for drills and practices, tutorials, simulations, and instructional games.

5.5. Computer Enriched Instruction (CEI) Computer Enriched Instruction (CEI) is defined as learning activities in which computers generate data at the students' request to illustrate relationships in models of social or physical reality, execute programs developed by the students, or provide general enrichment in relatively unstructured exercises designed to stimulate and motivate students.

5.6. Computer Managed Instruction (CMI) Computer Managed Instruction (CMI) refers to the activities executed by the school staff where they manage student's data related to the academic. Software used in the CMI is used to recommend additional resources to the students if their performance is found below the threshold.

5.7. Web Based Training (WBT) Web Based Training is anywhere, any-time instruction delivered over the Internet or a corporate Intranet to browser-equipped learners. There are two primary models of Web-based instruction: synchronous (instructor-facilitated) and asynchronous (self-directed, self-paced). Instruction can be delivered by a combination of static methods (learning portals, hyperlinked pages, screen cam tutorials, streaming audio/video, and live Web broadcasts) and interactive methods (threaded discussions, chats, and desk-top video conferencing).

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5.8. Web Based Learning (WBL) Web Based Learning is one way to learn using web-based technologies or tools. In other words, learner uses mainly computers to interact with the teachers, other students and learning materials. Web-based learning consists of technology that supports traditional classroom training and online learning environments. "Pure" web-based courses are entirely based on computer and online possibilities. In this case all the communications and learning activities are done online. On the other hand, web-based courses may have some face-to-face sessions besides the distant learning tasks. In this case they are called blended courses as they blend web-based activities with face-to-face activities.

Web-based learning can be also formal or informal. Formal web-based learning is purposed and learning activities are organized by teachers. Informal learning takes place while you are searching material from the Internet. It is self-paced, depending on your goals and ambition to learn.

5.9. Web Based Instruction (WBI) Web Based Instruction has evolved from any number of computer-based instructional methods, often referred to as Computer-Assisted Instruction (C AI), Computer Aided Instruction (CAI), Computer-Managed Instruction (CMI), Internet-Based Instruction (IBI), or Web-Based Instruction (WBI), but collectively called Computer-Based Education (CBE).

6. BENEFITS OF COMPUTER ASSISTED TEACHING OVER TRADITIONAL TEACHING METHODS

When learning is shifted from teacher-centric to student-centric followings benefits have been noticed [10, 15, 18].

- Can Enhance Student Achievement
- Increases Students' Motivation
- Increases Students' Achievement
- Prepare Students for the Outside World
- Lessons Can Be More Interesting and Hands on

7. THE EVALUATION OF CLASSROOM TECHNOLOGY

Technology used in Classroom	Periods
Slide Rule, Hornbook, Magic Lantern	16 th Century
Jacquard Loom, Slate & Chalk, Black Board	17 th Century

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Calculating Engines, Type Writer, Stereoscopes	18 th Century
Film Projector, Radio,Overhead Projector,Headphones,Mimeograph,Slide Ruler,Video Tapes,Photocopier,Microfilm Viewer,Liquid Papers,Calculator,Scantron,Public Broadcasting System,Desktop Computers,CD-ROM, Internet,Interactive Whiteboards	20 th Century
YouTube,iClicker,Smartphones,Virtual Reality	21 st Century

8.CONCLUSION

Information technology has not made the inter communication easier but also it has opened the ways of possibilities in the learning process. Geographical proximity has no meaning at all now in learning process. A student is now able to select an expert among various institutions to learn. Experts are interacting with the students in both online and offline mode as the time decided by the student. Several materials are available to the students besides the text books in much attractive and illustrative ways. Modern technologies are creating an environment of look and feel which is creating interest among the students for the subjects. Simulation is assisting the students in understanding the problem. Online/offline quizzes are available to check the progress of students. Student with a shy nature is crossing the boundaries of hesitation and forwarding their doubts before the experts. Smartphone has also changed the scenario dramatically. Smart applications are available to install on the phones. Availability of bandwidth at minimum cost is also creating interest among the students to move toward Computer Assisted Learning. Instant messaging services, chatting tools and email services have connected the entire globe in a single machine which is always available on a click.

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