

Use of Computer Technology in Modern Teaching-Learning

¹Subhajit Jana, ²Ishita Sarkar, ³Sudip Sahoo

¹B.Ed., Department of Education, University of Kalyani

²M.A. (Education), Department of Education, West Bengal State University

³M.A./M.Sc. (Education), Department of Education, University of Kalyani.

Abstract: The past seventy years have witnessed a dynamic shift in the way the computers have been used as a tool in the teaching-learning process. The present study focus on to discuss the different ways of computer-use in teaching-learning and to study the uses of computer technology in different sectors of modern teaching-learning. For that the researchers have taken the theoretically descriptive method followed by documentary review as the most appropriate method which was purely qualitative in nature. As per the objectives the study shown that there are seven ways of computer-use: Computer-Assisted/Aided Instruction (CAI), Computer-Assisted/Aided Learning (CAL), Computer-Managed Instruction (CMI), Computer-Managed Learning (CML), Computer-Based Training (CBT), Computer-Based Instruction (CBI), and Computer-Enriched Instruction (CEI). All of these ways are uses in teaching-learning with different purposes, even these are inter-related as part of a system of 'teaching-learning'. Researchers also elaborated the uses of computer technology in four aspects of teaching-learning as: Use of Computer for Student's Learning, Use of Computer for Teacher's Teaching, Use of Computer for Administration and Management, and Use in Distance Learning, e-Learning, Online Learning. Finally, the researchers were concluded that computer is significantly uses in every aspects of modern teaching-learning as seven ways.

Keywords: Computer, Education, Teaching, Learning, Modern.

INTRODUCTION:

The last half of 20th century has witnessed a phenomenal growth in the development and application of information technology. Computers are at the center of this development. Today, there is practically no field of activity which is not influenced by information technology and is not using computers. Education is no exception. Today, computers find wide-ranging applications in education as tools for efficient storage, retrieval and management of school records, administration of schools and educational systems, developing audio-visual presentations as aids to teaching, programmed learning with self-evaluation, knowledge exchange through electronic mail, accessing information and knowledge from various uses of computers. This great change has brought forth a fresh perspective in the use of computers in the teaching-learning process. The recent advancement in information technology innovations and computer usage is rapidly transforming work culture and teachers cannot escape the fact that today's teaching must provide technology-supported learning. Moreover, links have been made between computer use and constructivist, collaborative, and inquiry-based learning and also pedagogical change (Scrimshaw, 2004). Some researchers suggest that computer technology can overhaul education, serving as a panacea, or as an agent of change. Generally, it is accepted that computers have the potential to enhance teaching and learning (Gordin, Hoadley, Means, Pea, Roschelle, 2000).

The computer is the most significant contribution of man in the present Century. The present era is the era of computer science. It has wide applicability in the human life. It has made human life fast and precise. Computers have brought revolution in teaching – learning processes. This is one of the most advanced and sophisticated technologies of communication. Education can be imparted at the doorsteps of the learners with the help of computers. Distance education could come into being only due to modern methods of communication. Individuals can access the educational material from various sources, as well as learn various options available to them in the field of education and employment. The quality of education has also improved with the advent of computers. They also help students to learn according to their own needs, ability, and availability of time.

The age of computer is dawning in schools. It is taking over the world swiftly and surely. It is quite a jump from traditional teaching-reliance on textbooks – to the computer use. The computers serve a dual purpose. They expose students to modern technology while inculcating in term a new and scientific approach to learning.

Computer: The word 'computer' comes from 'compute' which is derived from the Latin original 'compute' meaning 'to calculate'. As which solves problems and does complicated calculations by processing data according to prescribed, Programmed instructions and then produces and retains the outcome of these processes. Computer as an electronic device which stores information on magnetic tapes or disks; scrutinize it and produces information as required from the data on the tape (Reith, 1993). Hence, computer could be said to be a human-made machine made up of electronic components that works information at a quick to convey results that are noteworthy to the customer. It is basically a processor of information. Computer is a machine proposed to make life less requesting in view of its speed, exactness, and ability to store significant measure of information and to finish extensive and multifaceted operation devoid of individual mediation (Albarkati, 2016). Computers, paying little respect to sort and size have five basic parts in particular, Input Unit, Memory Units, Control Units (CU), Arithmetic and Logic Units (ALU) and Output Units. Both ALU and CU are joined into one piece of gear/hardware known as the Central Processing Unit (CPU) which is the computer cerebrum.

OBJECTIVES:

- [1] To study the different ways of computer-use in teaching-learning.
- [2] To study the uses of computer technology in different sectors of modern teaching-learning.

METHOD OF THE STUDY:

Objectives of the present study clarify that it attempts to define the different ways of using the computer in modern teaching-learning and how the computer uses by different personnel involving in teaching-learning. Therefore, the theoretical description followed by documentary review was founded to be the most appropriate method. The study was qualitative in nature because data collection and analysis was fully depending on previously published documents, like: books, doctoral theses, journals related to the topic.

WAYS OF COMPUTER-USE IN TEACHING-LEARNING:

In the present study the term computer means a device which is used for instructional as well as pre-instructional and non-instructional purposes by teachers and students in teaching-learning process. The computer use is defined as ways in which teachers work with computers in the instruction of their students.

- Computer-Assisted/Aided Instruction (CAI)
- Computer-Assisted/Aided Learning (CAL)
- Computer-Managed Instruction (CMI)
- Computer-Managed Learning (CML)
- Computer-Based Training (CBT)
- Computer-Based Instruction (CBI)
- Computer-Enriched Instruction (CEI)

For clear understanding about these ways of computer-use in teaching-learning we need a clear concept about the terms- Instruction, Learning, Training and Management.

Instruction: Instruction refers to one or more advice and information about how to do or use something or list of order to do something. Instruction is vital for education, as it is the transfer of learning from one person to another. Any time you are given directions or told how to do something you are receiving instruction. Instruction is the purposeful direction of the learning process and is one of the major teacher class activities (along with planning and management).

Learning: learning is a process of modifying or acquiring new knowledge, skills, behaviour, thought, preference, or values through study, imitation, training, experience, or being taught. So, for a person, learning is acquired something by which his or her behaviour being changes and adjust with the different situation.

Training: Training concerned with the mastery of skill. Particularly, it is involve with developing a particular skill to a desired standard by instruction and practice. Training is the action of teaching somebody a particular skill. It may also refer to the teaching of a type of behavior. Training may apply to either humans or animals. It aims to improve a person's capacity, capability, performance, or productivity. Training is also the action of undertaking a course of exercise in preparation for, for example, a sporting event. Organized activity aimed at imparting information and/or instructions to improve the recipient's performance or to help him or her attain a required level of knowledge or skill (*Business Dictionary, 2019*).

Management: The organization and coordination of the activities of a teaching in order to achieve defined objectives. Management consists of the interlocking functions of creating corporate policy and organizing, planning, controlling, and directing an organization's resources in order to achieve the objectives of that policy (*Business Dictionary, 2019*). Educational management refers to the administration of the education system in which a group combines human and material resources to supervise, plan, strategies, and implement structures to execute an education system.

Computer Assisted Instruction (CAI):

A self-learning strategy, typically offline or online, involves student interaction with programmed educational materials. Computer Assisted Instruction (CAI) is an interactive instructional technique by which a computer is used to present educational material and to observe the learning that took place. CAI uses a combination of text, graphics, sound and video to enhance the learning process. The computer has many purposes in the classroom, and it can be used to help a student in all areas of the curriculum. The computer is a tool to facilitate and improve instruction. Computer-assisted instruction (CAI) is a narrower term and most often refers to drill and-practice, tutorial, or simulation activities offered either by themselves or as supplements to traditional, teacher directed instruction (Cotton, [1991](#)). It uses these activities to present topics and test those students' understandings.

Computer-Assisted Learning (CAL):

In Computer-Assisted Learning (CAL), the learner operates as an autonomous individual and as far as the content of instruction is concerned he/she seeks assistance, or it is given according to his needs. CAL describes an educational environment where a computer is treated as an aid to an overall teaching-learning strategy with other methods and aids such as lectures, demonstrations, projects, textbooks, supplementary books, worksheets, etc. It is used to complement regular teaching. Here, the computer becomes a tool - just like a chalkboard, a calculator, a pen, a chart, a model, a flash card, or a book - that helps teachers teach and helps their students learn. Teachers are resourced with multimedia (CDs or internet) content to explain topics better and make the teaching-learning process joyful, interesting, easy to understand. The computer motivates and caters for different learning abilities.

CAL deals with flexible, rapidly changing and detailed information, and is essentially more than a means of administering programmed instructional material, even though the computer can function as a tutor with unlimited patience. It improved the quality of teaching and enhance the learning process with the help of various tools such as multimedia projector, PowerPoint presentations etc. CAL is beneficial as: increasing students' interest and motivation in learning, making education individualize, providing compatible learning style, optimal use of learning time, providing immediate feedback, error analysis, repetitive practice, pre-determined to process syllabus etc.

Computer-Managed Instruction (CMI):

When discussing computers and education, if one remembers that learning and instruction generally refers to the same thing, a good deal of the confusion between different terms is often eliminated. Computer-managed instruction (CMI) can refer either to the use of computers by school staff to organize student data and make instructional decisions or to activities in which the computer evaluates students' test performance, guides them to appropriate instructional resources, and keeps records of their

progress. CMI has a broad meaning. In the broader sense, CMI in its most sophisticated levels provides the four instructional functions as: assesses the learners' present level of knowledge; diagnoses weakness or grasps in the students learning; prescribes learning activities to remediate the identified weaknesses; and continuously monitors progress of the learner.

Computer-Managed Learning (CML):

In Computer-Managed Learning (CML) the learner is more at the receiving end, and much less initiative is expected of him, than in CAL. CML deals with less detailed and less changing information, and has of late been increasingly associated with individualised learning in which the computer makes information stored in it available to the learners in order to provide various learning experiences. These include administering tests for assessing achievement as well as diagnosing the areas of weakness and their follow-up remedial instruction. CAI is more flexible than CML, and it provides greater scope for innovations. CML can save time, money, and bureaucratic headaches, special educators are likely to continue developing and using micro computer management tools for;

- ❖ Storing demographic and educational information on students and their needs
- ❖ Recording, monitoring, and reporting students progress
- ❖ Listing incomplete information on student records
- ❖ Recording contacts with parents and supporting agencies/personnel
- ❖ Recording, monitoring and reporting student due process status
- ❖ Generating reports on referrals, meeting, evaluation, placement, programming, and review for each students
- ❖ Locating, describing, and recommending appropriate materials based on individual student need
- ❖ Generating IEP objectives from a large data base and
- ❖ Issuing reminders for when reports are due.

Computer-Based Training (CBT):

The success of the use of the computer in the school and educational set up has resulted in its use for industrial and military training. In fact this is now more predominant and is often referred to as computer-based training (CBT). CBT is an approach to solve performance problems through training, which is essentially individualised. A typical CBT enables the learners to acquire the knowledge and skills that comprise competence in task performance. However, it is similar to CAI in its design. Some call it Technology Based Training (TBT) as well. CBT can be use as activity based tutorials of shorter duration that provide information for understanding and allows higher retention of knowledge. It allows mastery learning through drill and practice. CBT can provide complete experiential learning and a learner can develop skills by working on models and simulated projects.

Computer-Based Instruction (CBI):

After undergoing the related literature, the researcher would like to submit that any application of computer for instruction is known as Computer-Based Instruction (CBI). CBI are the broadest terms and can refer to virtually any kind of computer use in educational settings, including drill and practice, tutorials, simulations, instructional management, supplementary exercises, programming, database development, writing using word processors, and other applications. These terms may refer either to stand-alone computer learning activities or to computer activities which reinforce material introduced and taught by teachers. CBI is an umbrella term for use of computers in both instruction and management of teaching and learning process, which includes CAL (computer-aided learning), CMI (computer-managed instruction), and CAI (computer-assisted instruction).

Computer-Enriched Instruction (CEI):

Computer-enriched instruction (CEI) is defined as learning activities in which computers (1) generate data at the students' request to illustrate relationships in models of social or physical reality, (2) execute programs developed by the students, or (3) provide general enrichment in relatively unstructured exercises designed to stimulate and motivate students (Cotton, 1991).

USES OF COMPUTER TECHNOLOGY:

The researchers here discusses about the uses of computer technology in modern teaching-learning. Use of computers is the incorporation of computer resources and technology-based practices into the daily routines, work, and management of teaching and learning. Taylor (1980) believed that the computer can be used as a tutor to teach students, as a tool for students to use as they would use other educational tools, and as a tutee that students can teach to programme instructions in a computer. Researchers has expressed as four kind of computer use in teaching-learning purpose: *Use of Computer for Student's Learning*, *Use of Computer for Teacher's Teaching*, *Use of Computer for Administration and Management*, and *Use in Distance Learning*, *e-Learning*, *Online Learning*.

Use of Computer for Student's Learning:

Computer education in schools and universities plays an important role in students career development. Computer with the internet is the most powerful device that students can use to learn new skills and more advanced version of current lessons. Universities and schools are around the globe teaching student's basics of computers and the internet online and offline. The computer technology is uses in different purposes to facilitate student's learning which is listed below:

- ❖ To make teaching-learning individualized by preparing Programmed learning, Mathematics etc.
- ❖ To make opportunity for the students to learn from different teachers of the world.
- ❖ Computer uses as an aid to self-learning (using structured packages of learning material and self-evaluation).
- ❖ As a medium of electronic interaction of educational material (lessons, ideas, solution to problems, etc) between persons through e-mail or chatting.
- ❖ A computer can be used in several innovative ways to improve student's learning.
- ❖ To increasing the interest and motivation of students to learning.
- ❖ The students uses computer data bank to obtain data and process it quickly and meaningfully.
- ❖ The computer can be programmed to interact meaningfully with the student to enable him to overcome his learning difficulties.
- ❖ To increase the interest and motivation of students towards learning.
- ❖ To prepare compatible learning style.

- ❖ To optimal use of learning time.
- ❖ To provide immediate feedback of students learning.
- ❖ To error analysis, repetitive practice, pre-determined to process syllabus
- ❖ Computers help students to draw creativity on the computer such as by using windows paint program.
- ❖ If students are taking Language Classes or poem writing then they can do it by typing in different language on computers. If students are taking Mathematical classes they can use Microsoft Excel application to solve and understand questions.

Use of Computer for Teacher's Teaching:

The classroom teacher will never be replaced by programme of self-instruction. Rather, he will be freed to guide the learning of his students in ways that only a human being can. In using computer for instruction, the teacher's role is hypothesized as changed basically from that of informer to learning facilitator. His duty of delivering lectures changes to that of guide and problem solver. In the words of Johnson (1992), the instructor is freed from time-consuming chores as compiling, administering and marking tests, has time to work individually with the subjects. At the schools, the instructor is the manager of the learning process. So, computer has a great role to use by the teacher for modern teaching-learning which are pointed below:

- ❖ Teachers can plan their lessons with the help of computers.
- ❖ Computers can provide new and innovative information about specific subjects.
- ❖ They help in presentations such as Power point Presentations and serve as teaching aids.
- ❖ Students' cumulative Record Cards and other progress reports can be maintained in computers.
- ❖ Information on various issues relating to course material or supplementary information on the topic taught can be imparted through computers.
- ❖ Constructing, Scoring and analyzing tests.
- ❖ Keeping records of student's performance and progress through courses.
- ❖ Providing guidance to the students and advising them on the choice of next course module.
- ❖ Reporting on the performance and progress of students to individual students, tutors and educational administrators of the institutions.

Use of Computer for Administration and Management:

In the modern era every educational institution has some computer and internet connection to administration and teaching-learning purpose. In spite of having more number of computers in government institutions, trained computer staffs/ teachers are very rare. The private institutions are harnessing the use of computer well as compared to government institution. Both government and private Institutions from the study, however, do not use computer for administration and management properly. The present focusing only on what are the uses of computer in administration and management of teaching-learning rather on how they do not uses computer properly.

Use of computers can help in running of the institution which is called by administration and management. It can be used during the admission procedures, storing of officials and students' records etc. The application of computers to student record keeping evolved from simple tabulation and keeping records of registration figures, attendance, grades in examination, admission, registration scheduling, dropouts and additions, class rosters, student aid, fees and scholarship, testing and evaluation, and enrollment. Computers can also be used in educational planning and decision-making, controlling, assisting instruction and simulation. Computers are helpful in administrating aptitude tests and achievement tests at the time of entrance. A computer software can process performance of the functions related with teacher's and employee's promotion avenues, records of the distribution of salary, holding of the student's examination, preparing scheme of examination, printing of papers and question papers, evaluation of answer sheets, preparing marks sheets, certificates etc. computer also uses: For conducting the conference, seminar, and workshop etc.; to store the question sets of different expert teacher by making question bank; keeping records of finances, fees and donations etc.; preparing graphs, drawings and lists from the data as and when required; scheduling daily activities; reminding about specific times and dates when certain things must be done; providing information about professional questions (when hooked to a national data bank); maintaining record of school staff.

Computer can solve the administrators who are faced with problems such as student registration, fiscal accountability, and maintenance of records. Nowadays, the computer and specialized softwares are playing a vital role in library management too. Books, articles, magazines etc. of the library can be searched through computer maintained catalogues. Several of these catalogues, indexes, bibliographies, and record, may be found scattered across several locations.

Use in Distance Learning, e-Learning, Online Learning:

Computer has become an important part of every walk of life such as on campus, at home and in office. Computer and related technologies have been used in distance learning through various ways such as Teleconferencing, video-conferencing, audio graphics, Tele-text, video-text, multimedia and hypermedia, e-books, online database, online discussion, on-demand call in course etc. Virtual classrooms play an important role in distance learning. Students can raise their doubts and teachers can provide the solutions without going to one's place.

On the basis of computer technology, e-Learning and Online Learning are invented in modern education. Education via the Internet, network, or standalone computer, e-Learning is essentially the network-enabled transfer of skills and knowledge. e-Learning refers to using electronic applications and processes to learn. e-Learning applications and processes include Web-based learning, computer-based learning, virtual classrooms and digital collaboration. Content is delivered via the Internet, intranet/extranet, audio or video tape, satellite TV, and CD-ROM. With the technological development, e-Learning is structured as Online Learning which uses computer technology and internet services. In Online Learning system, students from different part of world are enrolled in the needed course of different institution of world. In India, online learning is provided as the Massive Open Online Course (MOOC) by the central governmental portal Study Webs of Active-learning for Young Aspiring Minds (SWAYAM).

Online examination and monitoring system have completely changed due to the development of modern education technology. These systems ensure about the fairness and impartiality in the examination. Today, various exams like NTA NET, JEE, NEET, JAM, GRE, GMAT, SAT, CCNA, MCSE and much more have been conducting computers in all over the world.

SUGGESTIONS:

- ❖ The government should provide Computer Education for every student to proper use of computer in their learning.
- ❖ The parliamentarian should pass a bill on stabilizing the price of computers in the market to make it easier for people to acquire at a reduced price.
- ❖ Computer spare parts should be imported to repair the damaged ones.
- ❖ The government should provide enough funds for educational institutions to purchase computer for instructional purposes and make available suitable computer environment in our institution.
- ❖ Conferences, workshops and symposium should be organized to aware institution's personnel and enlighten them on the need and use of computer in education.
- ❖ Curriculum developers should make Computer Education one of the core subjects to be offered in teacher training courses.

CONCLUSION:

Researcher concluded that, the world is made as a global village through computer technology in which the students are not limited in an institute rather they given opportunity to becoming a student of the world. Students are able to learn from the teachers of world. The present age of technological advancement has brought changes into virtually all human endeavour including the teaching and learning processes. Nowadays computer is uses by different ways (CAI, CAL, AMI, CML, CBT, CBI, and CEI) and every ways are involved to modernize the teaching-learning.

Earlier, computer was used only for education in educational institutions. In due course of time the use of computer in institutional administration and management has become popular. A computer can do help in the functions of an institution accurately and smoothly. Records can easily be updated and kept up-to-date, complete in all respects and with quite accurate. Computers are used to speed up the processing of clerical operations to reduce the amount of manual work involved in the institutional administration process.

The amalgamation of computers into education requires equal innovativeness in all the aspects of teaching-learning. Both policy makers and teachers share this policy. Policy-makers should provide additional planning time for teachers to experiment with the variety of ways in which computers can be used in teaching-learning and not limited to specific ways of using them. Such conclusion points to the invariable importance of computer resources for the success of technology initiatives across the world. This also implies that integrating computers in education initiatives should include measures for preparing teachers to use them fully and in a variety of ways in their teaching practice. Teacher's preparations necessitates not merely providing additional training opportunities, but also aiding them in experimenting with compute use before being able to use in teaching and learning. Students will be provided opportunity to make awareness about the different uses of computer for learning purpose. The quality of education has also improved with the advent of computers. Computer also helps students to learn according to their own needs, ability, and availability of time and also teacher can plan their lessons with the help of computers.

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