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A FLASH BACK ON COMPUTER ASSISTED INSTRUCTION (CAI)

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Abstract:

Today is the age of science and technology. In the field of education, computer takes a necessary place. Computer improves the students' way of thinking and problem solving. E-mail, database and other software are generally used for Computer Assisted Instruction. So, if we don't prepare the students with computer knowledge and skill, they will not be able to keep the society towards the advance future.

KEY WORDS:

Computer Assisted Instruction , science and technology.

INTRODUCTION:

COMPUTER ASSISTED INSTRUCTION (CAI)

Computer Assisted Instruction is made up of three words i.e. Computer + Assisted + Instruction. CAI, as the name suggests, stands for the type of instructions aided or carried out with the help of a computer. Computer is ahead of the teaching machine on account of its unlimited capacity of doing more work and multiple types of works at the same time for unlimited number of individual learners. In short about CAI we can say that CAI is the instructions which are given to the students with the help of computer. According to Bhatt B.D. and S.R. Sharma, "CAI is defined as an interaction between students, a computer controlled display and a response entry device for the purpose of achieving educational outcomes."

Thus, computer assisted instruction is the use of computer to provide instruction to the students' in such a way that the students react to that instruction accordingly and get the result of their reaction immediately.

According to Hilgard and Brower, "Computer Assisted Instruction has now taken as so many dimensions that it can no longer be considered as simple derivative of the teaching machine or the kind of programmed learning that Skinner introduced".

Thus, CAI is the providing the instructions to the students using computer. In other words we can say that CAI is the system of instructions in which the instructions are given by the use of computer instead of teacher or other mode as in the traditional way of instructions. Computer is the wholesome controller of all the activities in the front end. The back end of the system is controlled, designed, planned and implemented by human being who are mainly teacher, hardware and software engineers.

SCOPE OF COMPUTER ASSISTED INSTRUCTION

A computer has a lot of applications in all the fields. The presence of computer cannot be ignored in any field of life. Visualization gives better aspects of understanding rather than imagination. In teaching, through CAIs, if the subject is visualized then it becomes easier for the students to understand. Computer gives visual form of subject matter i.e. aid of computer make education simpler and easy to learn. So, we

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can say that computer is the wave for education. In the last few years the number of persons using computer assisted instructional material has increased markedly and numerous articles have been written about the role of technology in education in the 21st century. Example of such materials include programmed tests, audiotapes, videotapes, slide kits, monographs, computer-assisted and web-based instructional materials which may be used either alone or in combination with written materials for independent learning.

BASIC ASSUMPTIONS OF COMPUTER ASSISTED INSTRUCTION

Following are the basic assumptions of computer assisted instruction due to the characteristics of computer:

1. Instructions to large number of students- This assumption specifies that the instructions can be given to a number of learners at a time. It can do a much faster work than human being. So it can handle lots of users at a time. The number can be increased by improving the hardware configurations. Internet is a live example where millions of users are handled by few machines.
2. Automatic Response Recording- The second assumption is related to the recording of responses. The students interact with computer and they respond in this process. Whatever is their response is recorded immediately and automatically. This response is then further used by the computer to provide the feedback to the students.
3. Variety in Presentations- Computer is a multimedia equipped machine. It can have a lot of presentation styles, methods and techniques. The combination of hardware and software can generate lots of presentation styles and methods. This variety in methods and techniques is helpful in attaching the students to the system for more and more learning.

IMPORTANCE OF COMPUTER ASSISTED INSTRUCTION

Computer can provide all kind of information and resources in the field related to Science, Mathematics, Engineering, and Medical etc. In the field of education, computer takes a necessary place. Various challenges like population explosion, knowledge explosion, new ideas of providing education and child centred education etc. can be overcome by the use of technological developments. The shortage of teachers is another challenge. Then solution of these problems is to increase the speed of education, automatize it and make education individualized. All these characteristics are beared by the computer assisted instruction. The importance of CAI can be seen from the following points.

1. Systematic Learning- Computer in itself is a systematic machine. It performs the activities according to a set system of instructions. Thus the activities of computer make the learning process systematic and the learners learn according to the pre-set system.
2. Use of various senses- The students use various senses in learning. There are all types of hardware available which are developed by the keeping in mind the senses and their functioning. Multimedia approach of computer is the reason for the involvement of all the senses of learner in the system.
3. Self Pacing- Psychology says the students should move at their own speed of learning. They should not follow teacher's speed of teaching. The self pacing is provided by the Computer Assisted Instruction. Each student on CAI system learns its own speed.
4. Improved Accuracy Rate- There is no doubt about accuracy rate of computer. Thus the accuracy rate of learning is increased as there are lots of chances of error in the other system of instructions. In CAI the human beings are kept at back end. So error rate is reduced resulting in increased accuracy rate.
5. Individualized Instructions- CAI system of instruction does not give the group instruction. It interacts with each and every individual separately. The students are considered as an individual not a class or group. Computer diagnoses the students and then provide him the necessary instructions. Thus learning by CAI is individualized.
6. Makes learning Interesting- CAI by use of variety and change in its style, methods, techniques make the study attractive and the learners take interest in the process. They are motivated at every step of learning. The interest is maintained at every step.
7. Provide Effective Feedback- CAI system provides immediate and varied type of feedback to the students. Thus the feedback techniques motivate the students and they keep on learning using the CAI system.
8. Speedy Work- The learning speed is increased in whole. It does not mean that the students are given fast instructions. When a large number of students are instructed at a time then the whole effect of system is very much large as compared to traditional classroom learning. This increase the speed of learning work.

USES OF COMPUTER ASSISTED INSTRUCTION

Computer is used in every subject today. Computer and any subject have a close relation with each other these days. Computer is useful to the students of all the subjects. The benefits of computer have introduced new modes of education. The uses of CAI in education can be seen from following discussion.

1. Instruction of Learner- The major aim of CAI is to provide the instruction to the learner. This can be done in many styles. Using the concept of programmed instructions, instructions can be provided to the students. Computer assisted instructions take care of individual difference and handle each student accordingly. Instructions related to any subject can be given using CAI.
2. Drill and Practice- Students can use the computer for solving problem related to their education. Drill and practice on computer helps the students to understand and revise the concepts. Branching style remedial program can be used. Such practice has longer life of retention.
3. Simulation- Instructions can be given in simulation. There are various techniques available which gives a perfect real life experiences. The abstract concept or the situation where students cannot be taken can be taught using simulation techniques.
4. Tutorial and Dialogues- Subject matter can be taught to the students in effective way using various apparatuses. Today students can talk to computer and listen to it. Thus they can have a dialogue with computer system related to their education. They can have the solution of their educational problems.
5. Providing Educational Guidance- Computer can diagnosis the students from every aspect and can have the whole picture of student's status. Thus with proper diagnosis it can guide the students for their education. The timely and proper guidance can lead to the students for excellent achievement in education.
6. Evaluation uses- Evaluation is an integral part of Education. Students can be evaluated objectively and in less time by using computer. As evaluation is comprehensive term and it involves a lot of aspects. Thus computer can access all these aspects and can have the whole picture of students.
7. Vocational Guidance- Career adjustment is a major problem in front of students. They have some time a lot of options and sometimes none. They need to be properly guided. Computer can help the students in this situation also. It can provide the information related to vocations from all around the world.
8. Upgrading Knowledge- Computer is a vast source of knowledge. Knowledge is doubling every three years. It cannot be gained by going through books. Internet is the medium to access the knowledge. Internet helps the students to make them upgraded in every aspect.
9. Education Research- Research has become an integral part of Education. It is helpful in improvement in the educational process. Internet is an ocean of knowledge. It provides a lot of information and instructions to the research scholar related to education. Also the findings of research can be shared using computer with no time delay. It increases the speed of improvements.

ROLE OF TEACHER IN COMPUTER ASSISTED INSTRUCTION

Computer plays the leading role in CAI. This does not mean that the teacher has nothing to do in it. CAI has put the teacher in background and not eliminated it. It has taken the control of the educational activities. The teacher is still present but in the background. We cannot ignore the importance of a teacher in CAI system. Any machine can do nothing in any field without human assistance. So as is with computer. The system is made workable by the teacher. If computer provides the instructions to the learners, it is teacher who gives instructions to the computer. Once the system starts, the teacher relax and watch the whole system. The role of teacher can be seen from following points:

1. In Planning- Teacher is the designer and planner of all activities. He has to decide what to do, how to do and what should be the outcome of the process. The initial planning becomes the base of all the further activities.
2. Evaluation- Evaluation is an importance part of CAI. The teacher decides the following:

How to evaluate?
When to evaluate?
Interpretation of Result.

It is the teacher who knows all about this. He can plan and design perfectly the evaluation process.

3. Selection of feedback techniques- Feedback is necessary in CAI. There are various types of feedback techniques. Each has its own advantages and applications. The teacher decides which feedback technique is

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to use and when to use. He can also design a comprehensive feedback technique.

4. Selecting motivational techniques- Motivation is required in the learning process. Lack of motivation makes the process boring and the students indifferent. Thus proper motivational techniques should be used and this decision is taken by the teacher.

5. Providing Guidance- The students may adopt wrong way in the CAI process. They can go in wrong direction. It is the duty of teacher to provide them proper guidance related to the CAI system. The students keep on right track with timely and proper guidance.

6. Providing human touch to system- After all computer is a machine. It makes the system mechanical. This can harm the students in many ways physically as well as psychologically. The human touch is required in the system. This human touch is provided by the teacher.

7. Developing Instructional Material- What is to be taught to the students is a big issue. What type of content should be presented to the students? What should be the sequence of presentation of content? All these decisions are taken by teacher.

8. Selecting Method- The methods and techniques to be used in the system is another factor which is decided by the teacher. The teacher knows what the methods of teaching are and which one will suit to the students who are going to use the CAI system.

Thus we see that the teacher has to play a lot of duties in CAI. The machinery in CAI cannot replace the teacher. Infact nothing can be replace a teacher in the teaching learning process. Only the place may change. Sometime the teacher is in front and sometime computer.

ROLE OF COMPUTER IN COMPUTER ASSISTED INSTRUCTION (CAI) IN EDUCATION

Computer can be helpful in the following way to provide CAIs to the students:-

1. Using computer as audio-visual aid:- Teaching and learning can be made more effective by using computer as audio-visual aid, because sound and pictorial representation of any information directly strikes the mind of the learners. By using it as an audio-visual aid, various conferences & lectures can be made available to the students. This makes the communication media simpler and easier.

2. Preparing and explaining lecture through computer by using PowerPoint:- Power-point is the best way for any instructor, lecturer or any demonstrator to present his lecture. It provides us the facility of audio-visual aid. A student always gets vast knowledge if we will teach him with graphics picture.

3. Information collection and communication technology: - Any information about a concerned topic can be searched by using internet. This technology can benefit education in following ways:

(a) This enables the students & teachers to be the part of a larger global community.

(b) A big global community of students is introduced as a team and this team work can achieve all the planned targets.

(c) It is the open source software in education which control the quality of education, creates a rich learning environment.

(d) Information Technology can express students more effectively by providing tools that help them to overcome their problems.

(e) Information Technology can explore and investigate by stimulating interest and enhancing problem solving abilities.

(f) Information Technology can consolidate skills in an enjoyable and enjoyable and rewarding way.

4. Teaching through education CDs: - Information can be stored in CDs. These CDs can be used in class room to make the education easier. CDs are better than books due to their durability and long life than paper. Students can also get knowledge by download it into the computer.

5. Benefits of computer for Science/Medical students: - Number of websites are available on computer /internet related to science and medical field. Basically science and medical are the most advance fields. Every student requires knowing all the medical/science changes happening in the world and this can only be provided by the source known as computer. Many of the science experiments are done by the students with the help of computer.

6. Online education: - Here we use internet to teach the students. Internet means intranetworking. This online technique is mainly used in foreign country like America, Australia etc. but here in India there is lot of building professional who generally use online teaching through online teaching a teacher can teach the students whether he is at home. So, it is not compulsory the availability of teacher. In online classes, students can hear and watch the lecture. Study by book is old trend and everybody needs change. Through

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online classes we join Foreign University also as we need not to move to abroad.

7.Up-to-date knowledge of current affairs: - Knowledge of current affairs is essential for both the teachers and the learners. Now these days almost every popular newspaper, news channel have their own sites through which we can get every news information. Therefore we can know up to date knowledge of all the happening around the world.

8.Use of E-mail as CAI: - By using E-mail, we can discuss the topic of our study our far off friends. We can also exchange brilliant notes by using E-mail. As the speed of E-mail is extremely high as compared to general mail, it takes only few seconds to reach the destination. We can talk from our home with the scholars and researchers.

9.Internet Service as CAI: - By using internet facilities like searching, chatting, voice chat, surfing, E-mail etc., we can enhance our knowledge by communicating with other people in the world. By using internet we can search and learn more about any topic from the various available sites and from the libraries of the whole world.

10.Use of Computers in Research: - In research, it is essential for every candidate doing Ph. D to write research report. So, if we use computer in research work, then it become easy for analysis and interpretation of data, applying statistical techniques, making graphical representations etc.

11.For writing Project Report: - To make project, we can take any help from internet. There are many search engines i.e. google.com, altavista.com, yahoo search engine etc. Just search the specify report and download it on the computer and we can make it. Computer is also useful for analyzing & interpretation of data, for applying technical techniques, for making various types of graph etc.

WHAT DOES CAI LOOK LIKE FOR READING?

Reading computer programs demonstrate concepts, instruct, and remediate student errors and misunderstandings from preschool through college. Some programs help students learn basic sight word and phonics skills; others develop and enhance reading comprehension skills through increased fluency, word prediction, and story prediction. Programs may use reading activities as a community service projects, such as Read to Feed or as competition among students to read books (Accelerated Reader). Computers may be used individually or in groups in a cooperative learning environment where students can discuss concept as they learn them. Below is an example of a computerized program as the student sees it. The program may be used for instruction or assessment. The student uses the mouse to click the best word of the three presented for each blank to complete the sentence so that it makes sense. If this activity is used for instruction, the program gives positive feedback for correct answers or shows the student which answers are wrong and then gives the correct choice. The program may speak the sentence with the wrong word and ask the student to choose another word of the three, or it may highlight the correct choice and speak the correct sentence. If the program is used for assessment, no remediation is given; the program just scores the sentence.

Example of a Computerized Activity

First Screen

Bobby _____ up the flute and began to _____ into it to make _____.

ran	look	music
picked	jump	picture
tossed	blow	play

Second Screen

Bobby picked up the flute and began to blow into it to make play.

ran	look	music
picked	jump	picture
tossed	blow	play

Third Screen

Bobby picked up the flute and began to blow into it to make play.

	music	
	picture	
	play	

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One program that teaches phonics and reading skills to all ages of students continually monitors a student's speed and accuracy as the student works through each lesson (Autoskills; www.autoskill.com). The teacher sets an accuracy goal in the program for the student?the number of sounds or words per minute that the student must master. At the most basic level, the student, using headphones, hears the sound of the letter and then chooses which of three letters presented has that sound. For example, the program makes the sound of the letter k as this screen appears. The student uses the mouse to choose the correct letter. If the student makes the correct choice, a checkmark appears over the correct letter. If the choice is incorrect, an X appears over the correct letter. In either case, the program then quickly moves to the next letter.



The program gives the student 50 sounds and measures the amount of time the student takes to identify them. The number of sounds the student correctly identifies divided by the number of minutes is the measure of correct sounds per minute. The program graphs the information for the student and then prints a copy of the student's errors for the teacher. When the student reaches the goal the teacher has set, the program moves the student up to the next skill level. When the student has mastered the phonics, he or she will see word games and puzzles, a maze for comprehension, and a library with stories and comprehension questions. Programs such as this one are used for at-risk students and students with disabilities in middle and high school and with adults to improve reading skills.

DANGERS OF COMPUTER ASSISTED INSTRUCTION

Besides having so many benefits for the students, the CAI system has few dangers also:

- 1.Mechanical Process- Computer is machine and it makes the teaching learning process mechanical. The students interact with machines. They have machines all around them. Thus the mechanical world is created around the students' which is a dangerous environment.
- 2.Suppression of Expression Power- CAI system does not allow the students to express a lot. They are delimited to limited responses. They have to move according to pre-setted paths. They can only choose the path not create it.
- 3.Place the teacher at Back- CAI system places the teacher in the back. It has created a lot of problems. Te students are forgetting the importance of teacher. They are forgetting moral values and respect of teacher. This is very dangerous situation.
- 4.Use of Computer as solution- Sometimes the students start using computer as a solution. They get the answers from the computer which are expected from them. Thus they do complete work but learn nothing.
- 5.Hardware Hazards- CAI involves a lot of hardware. This hardware works with electricity and other powers. These devices can harm the students physically.
- 6.Health Hazards- There are certain devices which are harmful for health. A simple monitor is harmful for the eyes. Similarly long sitting in from of computer can create problem like eye sight, obesity and other health hazards.

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<http://www.house.gov/fattah/education/funandrec.htm> – Pennsylvania's Congressman Fattah's Web site offers literacy information.

<http://www.autoskill.com/> – A helping hand for literacy, this is the home site for the Autoskills computer program, which is beneficial for students who are at risk or have a reading disability and for ESL students.

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