# COMPUTER IN EDUCATION

Computer in Education

- In education, we use the computer for teaching/learning and the management of education.
- The use of the computer for teaching/learning is referred to as *Computer Assisted Instruction* (CAI).
- Its use in the management of education is called *Computer-Managed Instruction* (CMI).

Computer Based Instruction
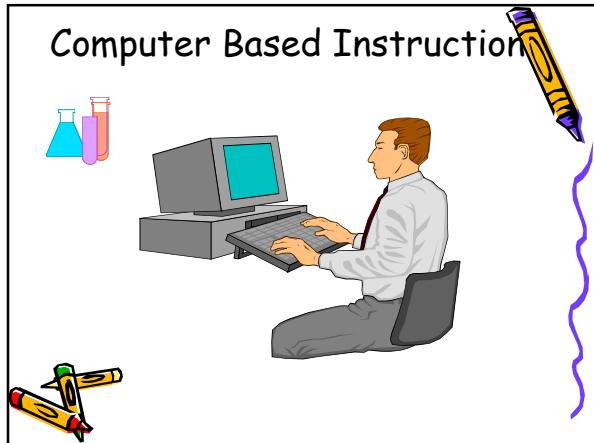
Computer Based Instruction

- Computer based instruction (CBI) is defined as the use of the computer in the delivery of instruction.
- Other similar terms include:
  - computer based training (CBT)
  - computer assisted instruction (CAI), and
  - computer assisted learning (CAL).

Common Categories of CBI

- Drill and Practice
- Tutorial
- Simulation
- Instructional Game
- Problem-Solving
- Other

Drill and Practice

- Exercises designed to increase fluency in a new skill or body of knowledge or to refresh an existing skill or body of knowledge.
- This approach assumes that the learners have previously been introduced to the content.

Drill and Practice

- Traditionally associated with basic skills in topics such as:
  - Mathematics
  - Language arts
  - Terminology
- Good programs provide user control, give feedback and reinforcement, and help learners master skills.

Drill and Practice

- Good for basic skills/knowledge where rapid student response is desired.
- Usually best to use in a series of brief sessions.
- Mainly intended for use by individuals.
- Should be geared to a level appropriate for the students.
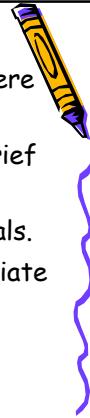
Tutorial

- A form of CBI in which the computer assumes the role of a tutor –
  - introducing content, providing practice, and assessing learning.
- Tutorials are used to introduce new content to learners in much the same manner that a human teacher might.

Tutorial

- Because tutorials present content to students, they can be used in any area of the curriculum for:
  - remediation when learners lack necessary background knowledge.
  - enrichment when learners wish to go beyond the basics.
  - introduction of content to all learners (freeing the instructor to do other things).

Tutorial

- Good for verbal and conceptual learning
- May require significant investment of students' time.
- Can be effectively used by individuals or groups of 2-3 students.
- Should be followed by opportunities for student application of knowledge.

Simulation

- A form of CBI that provides a simplified representation of a real situation, phenomenon, or process.
- Provides the opportunity for students to apply knowledge in a realistic format but without the time, expense, or risk associated with the real thing.

Simulation

- One of the best ways to use CBI in the sciences and other subject areas; simulation makes good use of what the computer does well.
- Simulations can mimic physical objects or phenomena, processes, procedures, and situations.

Simulation

- Best used for application of knowledge, problem solving, and thinking skills.
- Time involvement may be brief or extended depending on the simulation.
- Good for small groups of students, although can be used by individuals.
- Often requires guidance and follow-up for effective use.

Instructional Game

- Usually another type of CBI (e.g., drill and practice or simulation) modified to include gaming elements.
- Generally features
  - an end goal and rules of play.
  - sensory appeal.
  - motivational elements (e.g., competition, cooperation, challenge, fantasy).

Instructional Game

- Usually, they are aimed at younger learners such as those in the elementary grades.
- Games can substitute for worksheets and exercises, as a reward, or, in some cases, to foster cooperation.

Problem Solving

- CBI program that is designed to foster thinking or problem solving skills, but does not fit into one of the other categories.
- Usually focuses on a specific type of problem solving and provides practice on a number or variety of problems.

Problem Solving

- Problem solving applications sometimes focus on specific topics areas (e.g., mathematics, science) and
- sometimes they are designed to promote general problem-solving abilities (e.g., pattern recognition, prediction).

Other

- Many applications, particularly those that have been developed in recent years, are not easily classified into one of the preceding categories.

Advantages of CBI

- Interactive.
- Provides immediate feedback.
- Infinitely patient.
- Motivates learners.
- Provides consistency in presentation.
- Can adjust difficulty to level of learner.

Advantages of CBI

- Able to branch to provide appropriate content presentation to the learner.
- Can present concepts or processes dynamically and using multiple forms of representation.
- Can maintain records of student performance.
- Frees the instructor to do other things.

Limitations of CBI

- Equipment and software can be costly.
- Development takes time and money.
- Not all learning outcomes are well addressed by CBI.
- Unsophisticated applications may not make good use of the computer.
- Simple CBI has limited modalities (but multimedia is changing that).

Computer Managed Instruction (CMI)

- This involves the use of the computer in
  – scheduling courses/subjects,
  – recording and reporting attendance, storage and retrieval of student information,
  – marks management,
  – word processing etc.
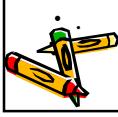
CMI

- Computers can be used to improve educational efficiency in the following areas
  – organization of information, computations and processing of paper work,
  – progress monitoring,
  – enhancement of planning,
  – improvement of communication, and enhancement of instruction
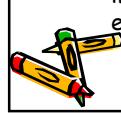
Organization of Information

- Computers can be used to organise data into an easily accessible format and
- can be easily stored in and retrieved from the computer.
- The data on staff, facilities, and finance can be similarly treated.
- The computer enables us to have electronically maintained database.

Computation and Processing of Paper Work

- Computer software and hardware enable even untrained personnel to do complex computations very rapidly and accurately.
- Similarly, the computer, enables us to draft, revise and produce reports of high quality, at least in terms of presentation.

Progress Monitoring

- We can use the computer to monitor progress in many areas of education.
- We can use it in continuous monitoring, and assessment of student learning and achievement.

Enhancement of Planning

- The database established through orgnisation of data on various elements of the school-pupils, staff, and resources,
- can be used to plan and make decisions on the basis of accurate and readily available facts.

Improvement of Communication

- Computers can be interconnected in order to promote communication linkages between them.

Questions