The Chronicles and Mechanisms of ICT


Abacus


Mechanical Calculator


Babbage's Analytical Engine

PRE-MECHANICAL & MECHANICAL (3000 BCE - 1840s)

- Pre-Industrial Calculating Engines
- Numerical Innovations
- Mechanical Programming Concepts

ELECTROMECHANICAL & VACUUM TUBE (1840s - 1950s)

- Global Wireline Networks
- Electronic Logic Machines
- Initial Electronic Processors


ENIAC model


Telephone


Telegraph operator

SILICON & PERSONAL COMPUTER


Silicon Transistors

Integrated Power


Compact Workstations

(1960s - 1980s)

- Microprocessors
- Miniaturization
- Decentralized Computing

(1990s - 2000s)

- The Web's Early Infrastructure
- Global Information Exchange
- Digital Commerce

INTERNET & WORLD WIDE WEB

World Wide Information Network


Data Exchange Terminal


Engraved Modem

MOBILE, CLOUD, & SOCIAL WEB


Wireless Communication


Cloud Compuoning


Social Content Recorder

(2007 - 2020)

- Wireless Communication Arrays
- Centralized Data Ateliers
- User-Recorded Chronicles

INTELLIGENT & UBIQUITOUS


Artificial Cogitation

Artificial Reasoning


Decentralized Edge Networks

EVOLUTION FROM WEB 2.0 TO WEB 5.0 IN EDUCATIONAL TECHNOLOGY

1 WEB 2.0 (Read-Write)

Wikispaces

- Student-generated content
- Collaborative learning (wikis, blogs)

Collaborative & Social Web

Google Docs

LMS Dashboard (Canvas/Moodle)

Podcast

- Social media integration
- Peer-to-peer sharing

2 WEB 3.0 (Read-Write-Execute)

Intelligent tutoring system, AI logic

- Personalized & adaptive learning
- Data interoperability (Linked Data)

Semantic & Decentralized Web

- Decentralized credentials (Blockchain)
- Self-directed study

3 WEB 4.0 (Symbiotic & Mobile)

Language tutoring

- Immersive technologies (VR/AR)
- Always-on mobile learning

Intelligent & Ubiquitous Web

Smart classroom IoT devices (smart board, sensors)

- Context-aware instruction
- Ubiquitous access

4 WEB 5.0 (Emotional & Decentralized)

- Affective & emotion-responsive learning
- Neuro-adaptive interfaces

Emotive & Human-Centric Web

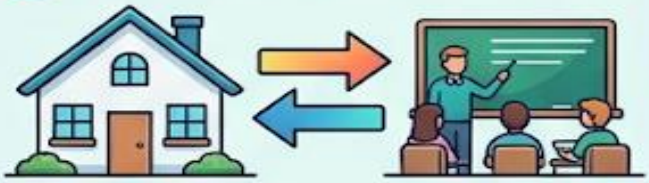
Affective tutoring system adapting its avatar

- Highly personalized feedback loops
- Learners control data & digital identity

ICT-BASED TEACHING METHODS

A GUIDE FOR MODERN EDUCATORS

1 FLIPPED CLASSROOM



- Students watching online video lectures at home, then doing active learning in class with a teacher.

PRE-CLASS STUDY | IN-CLASS ACTIVITY
VIDEO LESSONS | ONLINE QUIZZES

2 BLENDED LEARNING

- Mixture of online learning and traditional instruction.

HYBRID MODEL | FLEXIBLE SCHEDULE
ONLINE CONTENT | FACE-TO-FACE INTERACTION

3 GAMIFICATION

- Students engaged with game-like elements (badges, points, levels).

INCREASED ENGAGEMENT | MOTIVATION
EDUCATIONAL GAMES | PROGRESS TRACKING

4 ONLINE & VIRTUAL LEARNING

- Digital platforms and global reach.

REMOTE EDUCATION | VIRTUAL CLASSROOMS
SYNCHRONOUS/ASYNCHRONOUS | ONLINE PLATFORMS

5 PROJECT-BASED LEARNING (PBL) WITH ICT

- Using tech for real-world projects.

REAL-WORLD PROBLEMS | COLLABORATIVE TOOLS
RESEARCH & CREATION | DIGITAL PROJECTS

6 ADAPTIVE LEARNING

- Software adjusts content based on student performance.

INDIVIDUALIZED LEARNING | AI-DRIVEN SYSTEMS
TARGETED INSTRUCTION | IMMEDIATE FEEDBACK