

Introduction to Educational Technology

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Key concepts, historical milestones, and practical implications for teaching and learning

1. What Is Educational Technology?

Term	Definition
Educational Technology (EdTech)	The systematic use of tools, resources, and processes—often digital—to support, enhance, and transform teaching and learning.
Learning Management System (LMS)	Software platform that organizes content, tracks progress, and facilitates communication (e.g., Canvas, Moodle, Google Classroom).
Instructional Design (ID)	The practice of creating learning experiences that are effective, efficient, and engaging, often following models such as ADDIE or SAM.
Digital Pedagogy	Teaching approaches that intentionally integrate digital tools to achieve specific learning outcomes.

2. Historical Overview

Era	Milestones	Impact on Education
Pre-computer (1900-1960)	Radio, film strips, overhead projectors	Expanded reach of instructional media; introduced visual/audio learning.
Mainframe & Early Computer Age (1960-1980)	PLATO, Logo, first computer-based instruction	Pioneered interactive learning, simulation, and programming as a learning tool.
Personal Computer Boom (1980-1995)	Apple Macintosh, Windows, CD-ROMs, HyperCard	Shifted focus to individual learners; multimedia authoring tools emerged.
Internet & Web 1.0 (1995-2005)	Email, discussion boards, early LMS, OpenCourseWare	Enabled remote access to resources; introduced asynchronous learning.
Web 2.0 & Mobile (2005-2015)	Blogs, wikis, MOOCs, smartphones, BYOD	Emphasized collaboration, user-generated content, and anytime/anywhere learning.

Introduction to Educational Technology

Era	Milestones	Impact on Education
AI & Immersive Tech (2015?present)	Adaptive learning platforms, AR/VR, chatbots, learning analytics	Personalizes pathways, creates immersive simulations, and provides data?driven insights.

3. Core Theoretical Foundations

Theory	Core Idea	EdTech Application
Behaviorism	Learning = observable change; reinforcement drives behavior.	Drill?and?practice software, gamified quizzes, badge systems.
Cognitivism	Knowledge is mentally constructed; focus on information processing.	Concept maps, interactive simulations, spaced?repetition apps.
Constructivism	Learners actively build meaning through experience.	Project?based learning platforms, collaborative wikis, VR environments.
Social Learning (Bandura)	Learning occurs through observation and modeling.	Video tutorials, peer?review tools, community forums.
Connectivism	Knowledge resides in networks; learning is about making connections.	Social media integration, learning analytics dashboards, open?educational resources (OER).

4. Major Components of an EdTech Ecosystem

1. Infrastructure

- Broadband connectivity, Wi?Fi, device management (MDM), cloud storage.

2. Hardware

- Laptops, tablets, interactive whiteboards, VR headsets, IoT sensors.

3. Software

- LMS, content authoring tools (e.g., Articulate, H5P), assessment platforms, adaptive engines.

4. Content

- Digital textbooks, OER, multimedia (videos, podcasts), simulations.

5. People

Introduction to Educational Technology

- Teachers, instructional designers, IT support, learners, administrators.

6. Policies & Standards

- Data privacy (FERPA, GDPR), accessibility (WCAG 2).