

Instructional technology

Two words: *instruction* and *technology*

Part 1: Instruction

- instruction:**
1. [n] the **activities** of educating or instructing or teaching; activities that impart knowledge or skill; "he received no formal education"; "our instruction was carefully programmed"; "good teaching is seldom rewarded"
 2. [n] the profession of a teacher; "he prepared for teaching while still in college"; "pedagogy is recognized as an important profession"
 3. [n] (computer science) a line of code written as part of a computer program
 4. [n] a message describing how something is to be done; "he gave directions faster than she could follow them"

Source: <http://www.hyperdictionary.com>

instruction

- n 1: a message describing how something is to be done; "he gave directions faster than she could follow them"
[syn: [direction](#)]
- 2: the **activities** of educating or instructing or teaching; activities that impart knowledge or skill; "he received no formal education"; "our instruction was carefully programmed"; "good teaching is seldom rewarded"
[syn: [education](#), [teaching](#), [pedagogy](#), [educational activity](#)]
- 3: the profession of a teacher; "he prepared for teaching while still in college"; "pedagogy is recognized as an important profession" [syn: [teaching](#), [pedagogy](#)]

Source: *WordNet (r) 1.7*

Instruction \In*struc"tion\, n. [L. instructio: cf. F. instruction.]

1. **The act** of instructing, teaching, or furnishing with knowledge; information.
2. **That which instructs, or with which one is instructed;** the intelligence or information imparted; as:
 - (a) Precept; information; teachings.
 - (b) Direction; order; command. ``If my instructions may be your guide.'' --Shak.

Syn: Education; teaching; indoctrination; information; advice; counsel. See [Education](#).

Source: *Webster's Revised Unabridged Dictionary (1913)*

The adjectival sense means: "of or pertaining to or used in instruction; 'instructional aids.'" (WordNet Dictionary). Alternatively, "Pertaining to, or promoting, instruction; educational." (Webster's Dictionary)

Therefore, we can say that instruction—in the educational sense—is *activity that leads to learning*.

Part 2: Technology

Technology: *The application of the discoveries of science for some purpose.*

Therefore, instructional technology is ***the application of the discoveries of science for the purpose of facilitating activities that lead to learning.***

Close synonym: *Educational technology*

General Applications of Educational Computing Tools

Research: Computing tools that assist in the gathering, preparation, analysis, and presentation of educational research (the *strategic* level of education).

Administration: Computing tools that assist in the logistics of education: record-keeping, communication, supply, coordination, reporting (the *logistic* level of education).

Instruction: Computing tools used by instructors or learners, either separately or jointly, to foster learning (the *tactical* level of education).

Assessment: Computing tools used to measure, aggregate, disaggregate the results of some activity (includes research, administration, and instruction).

Instructional technology: Digital Computing Technologies

Computer Literacy: Learning *about* computers

Computer-assisted instruction (CAI): Learning *from* Computers

Cognitive tools (Mindtools): Learning *with* computers

Each, in turn:

Computer literacy:

understanding how the computer works, vocabulary, troubleshooting, theory, programming, history and development

Computer-assisted instruction:

Drill and practice (“electronic ditto sheets”) – stimulus-reward based

Tutorials – feed-back based

Intelligent tutoring systems –

“expert models” computer emulates an expert’s thinking processes or strategies
adaptive – questions, analyzes, presents more appropriate problems or feedback

Cognitive tools (Mindtools):

Computers support knowledge construction

Computers support explorations

Computers support learning by doing

Computers support learning by conversing

Computers are intellectual partners that support learning by reflection

“Mindtools are computer-based tools and learning environments that have been adapted or developed to function as intellectual partners with the learner in order to engage and facilitate critical thinking and higher order learning (p.9).”

Jonassen, D. H. (2000). *Computers as Mindtools for schools: Engaging in critical thinking, second edition*. Upper Saddle River, NJ: Merrill.

Types of cognitive tools – supporting the constructivist educational strategy

Semantic Organization Tools (databases; concept mapping)

Dynamic Modeling Tools (spreadsheets, expert systems, systems modeling, microworlds)

Interpretation Tools (Search tools, visualization tools)

Knowledge Construction Tools (hypermedia)

Conversation Tools (Synchronous and asynchronous conferencing)