

Education 173

Cognition and Learning in Educational Settings

Instructional Strategies

Fall Quarter 2007

Direct Instruction

- Direct Instruction
 - Also Called Teacher-Centered Instruction
 - Expository Teaching
 - Didactic Teaching
- Does Direct Teaching Have Bad PR?
 - "Few pedagogic devices . . . have been repudiated more unequivocally . . . than expository verbal instruction"
 - David Ausubel, *Human Learning*
- But Direct Instruction Can Be Efficient



Direct Instruction and Constructivism

- Prior Knowledge is Important
 - New knowledge must connect to LTM
- Is Direct Instruction Compatible with Constructivism?
 - Remember that psychological constructivism is a theory of *learning* rather than a theory of *teaching*.
- Evidence Against Minimally-Guided Instruction

Advance Organizers

- An Advance Organizer is a Framework
 - Such as: An Outline, Overview, Diagram, or Table of Contents
 - Can Promote Schema Activation
- Associated with Direct Instruction

Time and Learning

- Problem: Students Vary in How Much They Learn
- Why?: Students Learn at Different Rates
- Carroll's Model
 - Why not let time vary, rather than achievement?
- What Kind of Time?
 - Academically engaged time
 - Or "time on task"

degree of learning
= time spent / time needed



Mastery Learning

- Based on Carroll's Model of Time and Learning
- Mastery Learning Proposed by Benjamin Bloom
 - Also of Bloom's Taxonomy
- Assumes All Students Can Learn Content
- Instruction Followed by Mastery Tests
 - Students are not allowed to progress until they demonstrate mastery (e.g., 90%)
 - Many students require extra time or extra help, including tutoring
- Generally Positive Effects
- Does Mastery Learning Close Gaps?
 - Some evidence for this
 - Why? Because more students had entry skills

Discovery Learning

- Learner-Centered
- Uses Inductive Reasoning
 - One form of inference
 - Inference is “going beyond the information given” (Bruner)
 - Induction is reasoning from specific instance to general principle
- Is Discovery Learning Efficient?
 - Not always



Socratic Dialogue

- Socrates
 - The most “ignorant” man in Athens . . . but at least he knew that he was ignorant.
- Socratic Dialogue as a Teaching Method
 - Questions posed by teacher
 - Questions answered by student
 - Purpose: To spark thinking
- What Was Socrates’ Goal?
 - Student admits ignorance
 - Now, he and Socrates both know that th
 - Then real learning proceeds
 - Does learning require humility?



Inquiry

- Inquiry as a Guiding Goal of Education
 - Similar to *discovery learning* (but larger in scope)
 - Related to constructivism
 - Why? Students are active during learning
- Science Education, Especially
 - National Science Education Standards
- Broad Meaning of Inquiry
 - Not only lab experiences
 - Also, writing, reading, discussions
 - Expands what is meant by “scientific method”

Reciprocal Teaching

- Promotes Reading Comprehension
- Initially Led by Teacher
- Students Assume Teaching Roles
 - Turn taking
 - Assignment of Roles
- Promoting Learning Through Text Comprehension
- Used at a Wide Range of Grade Levels
 - Elementary through University

Aptitude-Treatment Interactions

- ATIs
- A Valid Intuition
 - Different students require different experiences
- What is an Aptitude?
 - Cognitive trait
 - Or personality trait
 - Or *any* trait relevant to instruction
- What is a Treatment?
- ATIs Are About Matching Treatment to Aptitude for Optimal Learning
 - Like organism to ecological niche



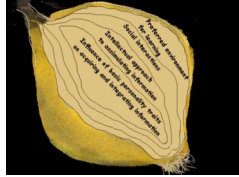
More About ATIs

- Aptitude is About *Fit*
 - Similar to adaptation in biology, or fitness for particular niches
 - No single best aptitude
 - No single best treatment
- The Most General ATI
 - Intelligence and Degree of Structure
- Higher-Level Interactions
 - Can ATIs become too complicated?



Cognitive Styles

- Styles versus Abilities
- Value-Differentiated Rather Than Value-Directional
 - More is not necessarily better
- Examples of Styles
 - Field Independence
 - Impulsivity vs. Reflectivity
- Are Styles Important?



"Organizing our thinking about learning styles: Curry's (1983) Onion Metaphor"
Source: <http://www.qatar.uaberta.ca/edit573/modules/module6%20-%20.rnSty.html>
