

Education 173
Cognition and Learning in
Educational Settings

Metacognition
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Defining Metacognition

- Definitions
 - Most simply: Thinking about thinking
 - More exactly: Monitoring and controlling thought
- “Meta” Means “Alongside”
- Metacognition Plays a Role in Several Kinds of Complex Cognition, Such As:
 - Metamemory and metacomprehension
 - Problem solving
 - Critical thinking



Metamemory and
Metacomprehension

- Do You Know What You Know?
 - And what you *don't* know?
- *Metamemory*: How Accurately a Learner Can Appraise His or Her Own Knowledge State
 - Do you know the names of the planets?
- *Metacomprehension*: How Accurately a Learner Can Judge His Understanding of Written or Spoken Communication
 - Sometimes readers have an “illusion of knowing”

Examples of Metacognition Questioning One's Own Cognition

- Do I Understand What I Just Read?
 - With awareness, I have some choices to make.
 - Such as re-read, as for help, etc.
 - Without this awareness, there is no choice.
- How Much Time Do I Need to Study for the Test?
- What Study Strategies Should I Use?
- I Think I Understand the Material, But How Can I Be Sure?
- Can Other People Help Me to Understand The Material?

Metacognition and Emotion

- Metacognition Involves Not Only “Cool” Cognition, It Has Other Aspects
 - Emotional Aspects
 - Staying calm during frustration, and setbacks
 - Persisting
 - Self-efficacy Beliefs
 - Controlling self-doubt
 - “I can do this.”

Metacognitive Skills and Education

- Metacognitive Skills Are Part of What it Means to be an Educated Person
- Metacognition Skills Are Tools for Personal Effectiveness in an Information-Rich World
 - We all need to be metacognitive
- Metacognitive Skills are Teachable and Learnable
 - And therefore a worthwhile goal for student learning?

Is Metacognition Content-Specific?

- Sometimes *Yes*: Content-Specific Metacognition
 - In science, for example:
 - What phenomena am I trying to predict or explain?
 - How can possible explanations (hypotheses) be compared and tested?
- Sometimes *No*: Content-General Metacognition
 - Some metacognitive skills are general and therefore useful in many different problem-solving situations:

Is Metacognition Conscious or Automatic?

- Early Theoretical Definitions Suggested That Metacognition is a Conscious and Deliberate Process.
- But Could Metacognition Have Some Element of Automaticity?
 - Perhaps you *always* evaluate truth claims, even in casual conversations.
- Some People Seem to Have the Habit of Being Metacognitive.

How to Improve Metacognition

- Metacognition Must Have a Credible Presence in the School Curriculum
 - As an explicit goal of learning
 - Through instruction in metacognition. How?
- One Way to Teach Metacognition:
 - Cognitive modeling by a teacher or professor
- Or, Social Interaction Among Learners
 - Potentially very effective
 - But it's difficult to sustain the quality of group learning


