Education 173
Cognition and Learning in
Educational Settings

Metacognition
Fall Quarter 2007

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