Metacognition: Thinking about thinking

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Cognition

- to help an individual achieve a particular goal (understanding a text)
- ability to retrieve knowledge from memory

Metacognition

- to ensure that the goal has been reached (quizzing yourself on the text)
- ability to know whether or not you know
Definitions

• the ability to calibrate or monitor one’s performance (Dunlosky and Thiede, 1998)
• ability to assess our own skills, knowledge, or learning
Metacognition

• employ study strategies to reach a goal
• self-assess one’s effectiveness in reaching that goal
• self-regulate in response to the self-assessment
Poor Metacognition

• “Once students feel they have mastered material, they will stop studying, usually before they have the depth and breadth of understanding they need to do well. On exams, they will often believe their answers are absolutely correct, only to be shocked when they make a bad grade.”

• Stephen Chew
Stephen Chew’s Beliefs that Make You Stupid

• Learning is fast: “I read 8 chapters last night”
• Knowledge is comprised of isolated facts: bold words in text, margin definitions
• Being Good at a Subject is Inborn
• I’m Really Good at Multi-tasking: never compared to performance while concentrating
What is the Most Important Factor in Successful Learning?

• The intention and desire to learn?
• Paying close attention to the material as you study?
• Learning in a way that matches your learning style?
• The time you spend studying?
• What you think about while studying?
Good Metacognition, students see Problems with Processing

• Errors in Encoding
  – Miss important data
  – Can’t distinguish b/n important and filler data

• Errors in Operation: failing to use subskills
  – Not dividing task into sub-steps
  – Proofread all at once rather than checking for punctuation, subject-verb agreement, transitions

• Errors in Goal Seeking: doing the wrong task
  – Summarizing rather than analyzing
Good Metacognition Students see Problems with Cognitive Load

• Don’t have subskills required
• Not enough automatic, internalized subskills
  – Reason to use and go over rubric before assignment
  – QEP Rubric
Good Metacognition Students see Problems with Ability

- Lacking the level of needed mental abilities
- Students asked to think abstractly about general concepts and issues, but they can only think concretely about specific situations
Strategies: Teach Study Strategies for Your Course

• Goldilocks’ story
• Demonstrate how to do the assigned writing tasks
• Provide models
• Provide feedback
• Make the students’ reading goals clear: read for general or detailed comprehension, read critically, or read for insight
Strategies: Preview Assigned Reading

• Small group work to summarize what already know on subject
• Take a poll on some of the issues addressed
• Explain how reading relates to overall course objectives/learning outcomes
• Provide reading questions (not worksheet)
• Teaser questions
Strategies: Eric Mazur’s ConceptTests

- Short multiple choice question
- Poll for answers
- Discuss in small group
- Poll again
- Discuss as a class

**Clickers would be a lot of fun with this**
**Online classes could use Google surveys**
Strategies: Angelo and Cross’ Minute Paper

• “What was the most important concept you learned in class today?” or "What concept did you find the most difficult or confusing?“

• If throwaway example is identified as most important, YOU have work to do and THEY have work to do
Strategies: On Test Debriefing

• Self-grade before turning in
• Explain why they know the answers are wrong
• Survey on test asking study statistics
  – Hours spent
  – Review notes?
  – Marked text?
Strategies: Student-Led Test Debriefing

• Did they miss questions from days they missed class?
• What type of question did they miss
  – Multiple choice v short answer v true/false v.....
  – Pure content, applied, or analysis
• Did they miss more questions came from reading notes or class notes?
• How many times did they change original answer?
  – How often was change correct?