ENCYCLOPEDIA OF EDUCATIONAL TECHNOLOGY

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Metacognition

METACOGNITION IS A WORD THAT DOESN'T EXACTLY ROLL OFF THE TONGUE. In fact, the term may be unknown to most people. Metacognition is a learning concept first described by John Flavell in 1976. It can be defined in the simplest terms as thinking about thinking.

Some compare the metacognitive process to that of the chief executive officer (CEO) whose role is corporate manager and decision maker. Metacognitive thinking is the CEO of learning. Just as the CEO manages the corporation, metacognitive strategies manage a learners thinking about and planning for learning.

Metacognitive thought is an essential skill for learning. It ensures that the learner will be able to construct meaning from information.
To accomplish this, the learner must be able to think about their own thought process, identify the learning strategies that work best for them and consciously manage how they learn.
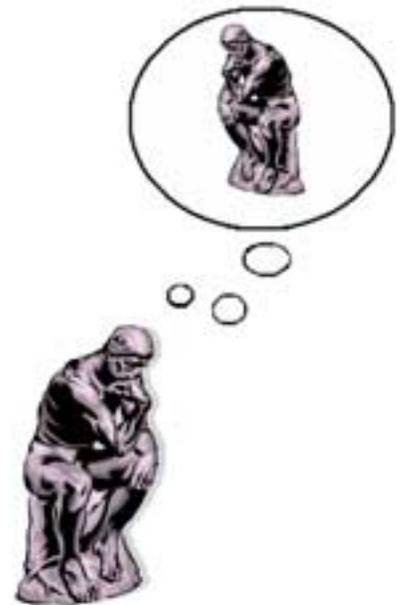
Examples of metacognitive strategies include:

- Planning - looking ahead and preparing for written or verbal communication.
- Self-monitoring - checking your comprehension while listening

or reading.
- Self-evaluation - checking your learning against a standard.

Metacognitives learners ask themselves and answer questions like:

- How much time do I need to set aside to learn this? (Planning)
- Do I understand what I am reading or hearing? (Self-monitoring)
- How can I measure my success? (Self-evaluation)

Metacognitive and Cognitive Learning Strategies

It is important to understand the relationship between metacognitive and cognitive strategies. The metacogntive activities like those listed above, usually occur before or after a cognitive activity.

An example of the relationship between the metacognitive and cognitive strategies is a learner who uses self-monitoring when reading. He/she knows that they are not comprehending what they have read (metacognitive). They also know that they will understand the text better if they create a concept map or outline (cognitive).
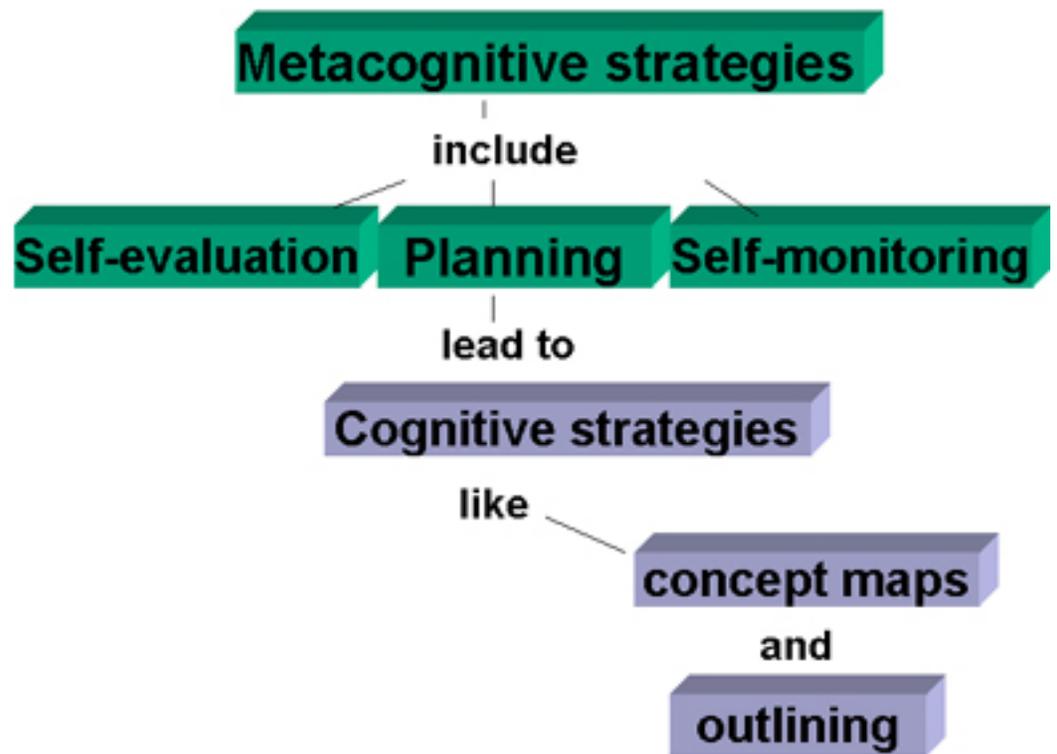
This concept map is an example of a congnitive learning strategy that a learner might use to better understand the relationships between metacognitive and cognitive strategies.

For more information on this topic see articles by E. Blakey & S. Spence, and D. Hacker.

Jan Wahl
San Diego State University

Metacognition

KNOWING HOW TO LEARN, and knowing which strategies work best, are valuable skills that differentiate expert learners from novice learners. Metacognition, or awareness of the *process of learning,* is a critical ingredient to successful learning.

What Is Metacognition?

Metacognition is an important concept in cognitive theory. It consists of two basic processes occurring simultaneously: *monitoring your progress* as you learn, and *making changes and adapting* your strategies if you perceive you are not doing so well. (Winn, W. & Snyder, D., 1998) It's about self-reflection, self-responsibility and initiative, as well as goal setting and time management.

"Metacognitive skills include taking conscious control of learning, planning and selecting strategies, monitoring the progress of learning, correcting errors, analyzing the effectiveness of learning strategies, and changing learning behaviors and strategies when necessary." (Ridley, D.S., Schutz, P.A., Glanz, R.S. & Weinstein, C.E., 1992)

Figure 1: Description of an expert learner

How Does a Novice Learner Differ from an Expert Learner?

Novice Learners don't stop to evaluate their comprehension of the material. They generally don't examine the quality of their work or stop to make revisions as they go along. Satisfied with just scratching the surface, novice learners don't attempt to examine a problem in depth. They don't make connections or see the relevance of the material in their lives.

Expert learners are "more aware than novices of when they need to check for errors, why they fail to comprehend, and how they need to redirect their efforts." (Ertmer, P.A. & Newby, T.J., 1996)

Take reading for example. We've all experienced the phenomenon of reading a page (or a whole chapter!) in a textbook and then realizing we haven't comprehended a single thing. A novice learner would go on to the next page, thinking that merely reading the words on a page is enough. An expert learner would re-read the page until the main concept is understood, or flag a difficult passage to ask for clarification from an instructor or peers later.

Metacognitive Strategies for Successful Learning

Imagine you are about to take a final exam. Here are some metacognitive strategies to try:
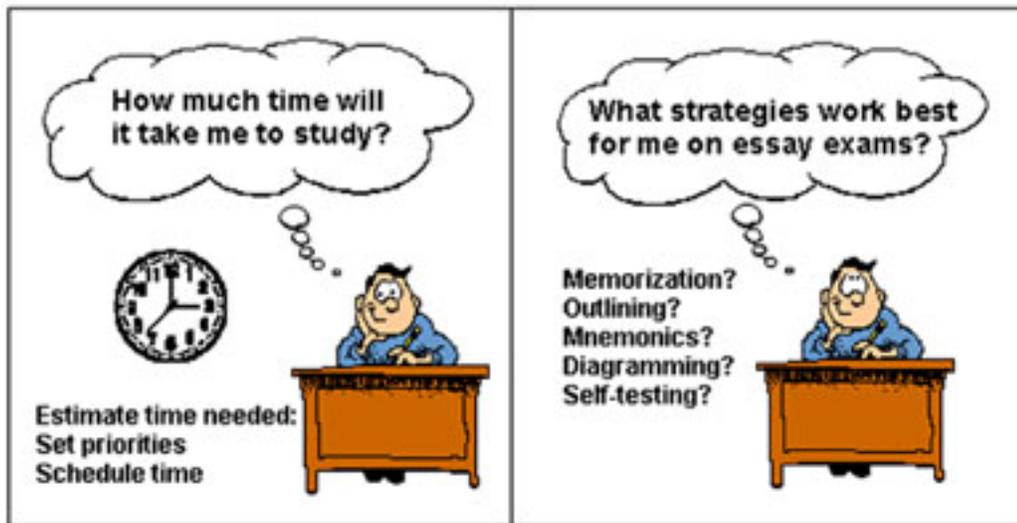
Figure 2: Using metacognitive strategies to study for an essay exam.

More on Metacognitive Strategies for Successful Learning

Awareness:

- Consciously identify what you already know
- Define the learning goal
- Consider your personal resources (e.g. textbooks, access to the library, access to a computer work station or a quiet study area)
- Consider the task requirements (essay test, multiple choice, etc.)
- Determine how your performance will be evaluated
- Consider your motivation level
- Determine your level of anxiety

Planning:
- Estimate the time required to complete the task
- Plan study time into your schedule and set priorities
- Make a checklist of what needs to happen when
- Organize materials
- Take the necessary steps to learn by using strategies like outlining, mnemonics, diagramming, etc.

Monitoring and Reflection:
- Reflect on the learning process, keeping track of what works and what doesn't work for you

- Monitor your own learning by questioning and self-testing
- Provide your own feedback
- Keep concentration and motivation high

Why Are Metacognitive Strategies So Important?

As students become more skilled at using metacognitive strategies, they gain confidence and become more independent as learners. Independence leads to *ownership* as student's realize they can pursue their own intellectual needs and discover a world of information at their fingertips.

The task of educators is to acknowledge, cultivate, exploit and *enhance* the metacognitive capabilities of all learners.

References and More Information

Brown, A.L., Bransford, J.D., Ferrara, R.A. & Campione, J.C. (1983). Learning, remembering, and understanding. In J.H. Flavell & E.M. Markman, eds. *Vol. 3, Handbook of child psychology: cognitive development*, 177-266. New York: Wiley

Ertmer, P.A. & Newby, T.J. (1996). The expert learner: strategic, self-regulated, and reflective. *Instructional Science 24:* 1-24. Netherlands: Kluwer Academic Publishers

Grabinger, R.S. (1996). Rich environments for active learning. In D.H. Jonassen, ed. *Handbook of research for educational communications and technology*, 665-692. New York: Simon & Schuster Macmillan

Ridley, D.S., Schutz, P.A., Glanz, R.S. & Weinstein, C.E. (1992). Self-regulated learning: the interactive influence of metacognitive awareness and goal-setting. *Journal of Experimental Education 60* (4), 293-306.

Winn, W. & Snyder D. (1996). Cognitive perspectives in pyschology. In D.H. Jonassen, ed. *Handbook of research for educational communications and technology*, 112-142. New York: Simon & Schuster Macmillan

[Julie Halter](#) Graduate Student, SDSU Department of Educational Technology