Metacognition

Metacognition is, put simply, thinking about one's thinking. More precisely, it refers to the processes used to plan, monitor, and assess one's understanding and performance. Metacognition includes a critical awareness of a) one's thinking and learning and b) oneself as a thinker and learner.

Initially studied for its development in young children (Baker & Brown, 1984; Flavell, 1985), researchers soon began to look at how experts display metacognitive thinking and how, then, these thought processes can be taught to novices to improve their learning (Hatano & Inagaki, 1986). In *How People Learn*, the National Academy of Sciences' synthesis of decades of research on the science of learning, **one of the three key findings of this work is the effectiveness of a "'metacognitive' approach to instruction"** (Bransford, Brown, & Cocking, 2000, p. 18). Metacognitive practices increase students' abilities to transfer or adapt their learning to new contexts and tasks (Bransford, Brown, & Cocking, p. 12; Palincsar & Brown, 1984; Scardamalia et al., 1984; Schoenfeld, 1983, 1985, 1991). They do this by gaining a level of awareness *above the subject matter*: they also think about the tasks and contexts of different learning situations and themselves as learners in these different contexts. When Pintrich (2002) asserts that "Students who know about the different kinds of strategies for learning, thinking, and problem solving will be more likely to use them" (p. 222), notice the students must "know about" these strategies, not just practice them. As Zohar and David (2009) explain, there must be a "*conscious* meta-strategic level of H[igher] O[rder] T[hinking]" (p. 179). Metacognitive practices help students become aware of their strengths and weaknesses as learners, writers, readers, test-takers, group members, etc. A key element is recognizing the limit of one's knowledge or ability and then figuring out how to expand that knowledge or extend the ability. Those who know their strengths and weaknesses in these areas will be more likely to "actively monitor their learning strategies and resources and assess their readiness for particular tasks and performances" (Bransford, Brown, & Cocking, p. 67).

The absence of metacognition connects to the research by Dunning, Johnson, Ehrlinger, and Kruger on "Why People Fail to Recognize Their Own Incompetence" (2003). They found that "people tend to be blissfully unaware of their incompetence," lacking "insight about deficiencies in their intellectual and social skills." They identified this pattern across domains—from test-taking, writing grammatically, thinking logically, to recognizing humor, to hunters' knowledge about firearms and medical lab technicians' knowledge of medical terminology and problem-solving skills (p. 83-84). In short, "if people lack the skills to produce correct answers, they are also cursed with an inability to know when their answers, or anyone else's, are right or wrong" (p. 85). This research suggests that increased metacognitive abilities—to learn specific (and correct) skills, how to recognize them, and how to practice them—is needed in many contexts