THINKING MAPS

METACOGNITION

CLOSING THE GAP BETWEEN KNOWING AND DOING

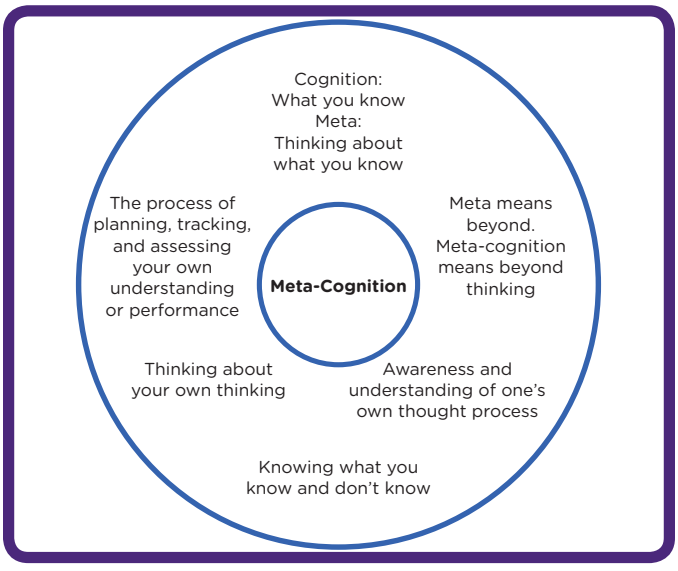
We ask our students to know a lot of things, from the names of state capitals to the quadratic equation. But how do they know what they know? Or what to do with what they know?

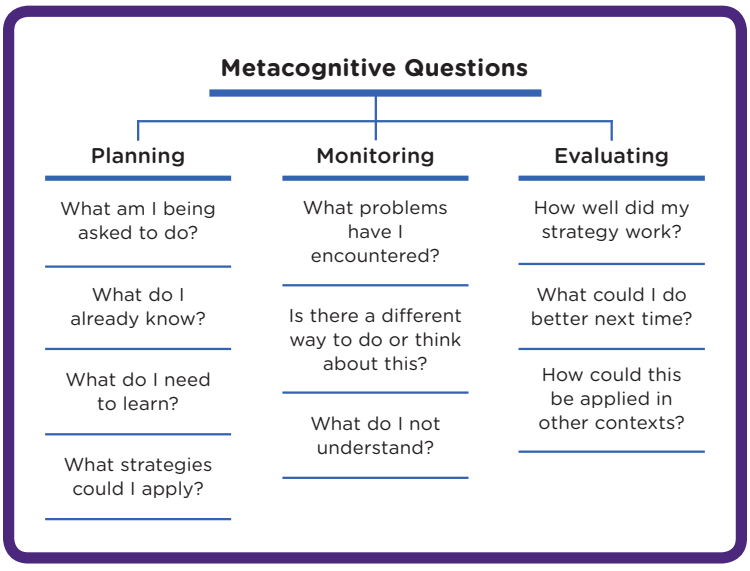
The answers lie in metacognition. Metacognition provides a structure for learning that enables academic rigor. It is the critical step between knowing something on a superficial level and developing a true understanding that allows you to apply, connect, and extend your knowledge. In other words, metacognition closes the gap between *knowing* and *doing*.[1]

What do we mean by Metacognition?

Metacognition is defined as "an awareness or analysis of one's own thinking and learning processes.[2] " It is an important component of critical thinking.

Metacognition involves both an understanding of the **self** (What do I already know? What do I need to learn?) and of the **task** (What is required? What strategies can I apply to the problem?). Students use metacognition to *plan* an approach to tackling the task, *monitor* their progress, and *evaluate* their success.[3]



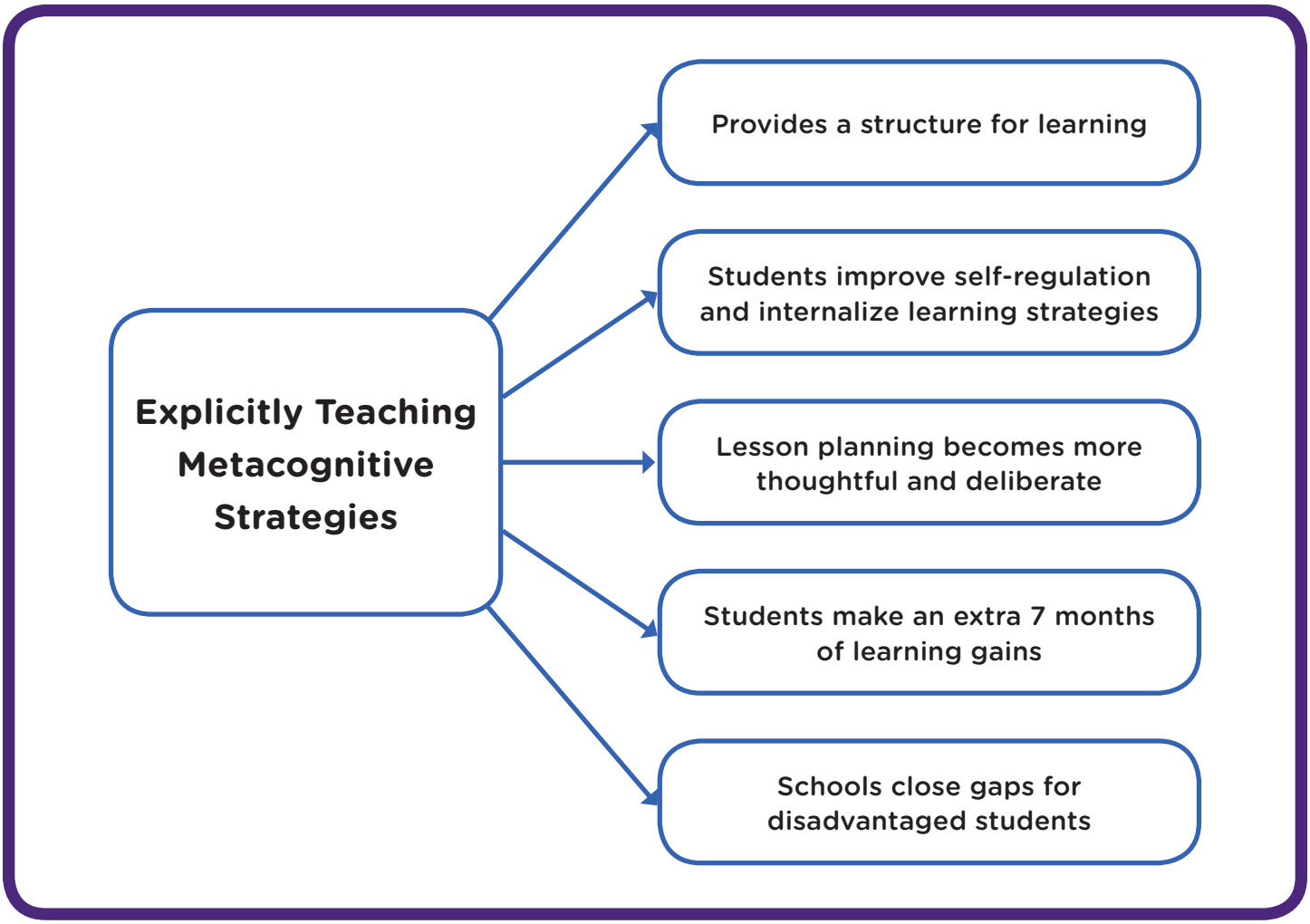


[1] Stevens, S.O. (2017) *The Little Golden Book of Metacognition*. CreateSpace Independent Publishing.
[2] Metacognition. 2018. In *Merriam-Webster.com*. Retrieved October 9, 2018 from https://www.merriam-webster.com/dictionary/metacognition
[3] Quigley, A., Muijs, D. & Stringer, E. (2018) *Metacognition and Self-Regulated Learning Guidance Report*. London, England: Education Endowment Foundation

Why Metacognition Matters

Metacognitive strategies enable students to become more independent learners. Metacognition is closely related to self-regulation: the ability to control what we think, how we behave and what we say and do. Students who are aware of their own thinking and learning are better able to regulate these processes. This has implications across all aspects of a student's life, from academics to social-emotional learning. Metacognition is a core aspect of emotional intelligence and underlies 21st Century skills such as critical thinking, information literacy, creativity, collaboration, and leadership.

There is ample research to support the use of metacognitive strategies in the classroom. Explicit teaching of metacognitive strategies and self-regulation has demonstrated strong positive gains in learning, equivalent to seven extra months of growth over the school year.[4] The biggest gains are seen for students coming from disadvantaged backgrounds. Teaching metacognition doesn't just level the playing field—it actually *raises* the playing field for all students.



[4] Quigley, Muijs & Stringer (2018)

Teaching Metacognitive Strategies

Fortunately, metacognition is a highly teachable skill.[5] To be effective, teaching metacognitive strategies must be explicit, structured, and cumulative. As metacognitive strategies are woven into the curriculum over time, students internalize these strategies and learn to apply them on their own. Teachers also become more deliberate about including metacognition in their lesson planning and instruction.

One very effective way to teach metacognitive strategies is to use visuals. Using visuals is associated with an effect size of 0.60 on John Hattie's "Barometer of Influence", where an effect of 0.40 equals one year's expected growth.[6] Using metacognitive strategies has an effect size of 0.69. Visuals that are explicitly tied to cognitive processes—a visual "language for learning"—help students access metacognition and maximize these effects.

That's why Thinking Maps are tied directly to fundamental cognitive processes. Each Map is correlated to one of eight cognitive processes: defining in context, describing, comparing/contrasting, classifying, part/whole relationships, sequencing, cause & effect, and analogies. Together, they help students make their thinking visible and activate metacognitive processes.

Metacognition cannot be taught in isolation. It must be grounded in content. The same basic metacognitive strategies apply from grade to grade and across all content areas. As students internalize these strategies, they learn how to be effective learners, no matter the subject area or difficulty level.

Closing the Gaps for Every Student

Metacognitive strategies help all students, but they are especially critical for students who are starting from behind. "Good" students typically are the students who are applying metacognition already, either because it comes naturally for them or because experiences in or outside of school have reinforced metacognitive skills. But most students need to have these strategies explicitly taught in school. This is especially true for students with learning differences and students coming from disadvantaged backgrounds.

Integrating metacognition into teaching creates a community of thinking in the classroom that benefits all students. As students learn how to access their own thinking and understand their learning processes, they become more independent and motivated in their learning. Students who can reflect on and regulate their own thinking will be prepared to be effective lifelong learners, no matter what the future demands of them.

[5] Schraw, G. (1998) "Promoting general metacognitive awareness." *Instructional Science* March 1998, Volume 26, Issue 1-2, pp113-125

[6] Hattie, J. (2008) *Visible Learning: A Synthesis of Over 800 Meta-Analyses Relating to Achievement*. New York, NY: Routledge-Taylor & Francis Group