Designing Effective Projects: Metacognition
Teaching Metacognition

Teaching Students to Think about Their Thinking

The metacognitive abilities of students grow and thrive in an environment where the actual processes of thinking are an important part of the instruction and conversation during the day. To create this environment teachers and students must develop a language of thinking that they all use consistently. When teachers use terms like “strategy,” “process,” and “metacognition” frequently, they communicate their importance to students and emphasize the processes that are important for effective learning.

Tishman, Jay, and Perkins (1992) suggest hanging posters around the room to remind students to think about their thinking. Prompts such as “Is this the best strategy for the task?” or “Is your plan working as well as it could be?” help students remember to be metacognitive.

Providing students time and tools to help them become more metacognitive in their learning is one of the most effective ways to improve student achievement (1998). Journals and learning logs can help students identify the strategies that they have used or might use and then evaluate their effectiveness. Scaffolding in the form of cues or prompts such as “What might you do next?” “How well are your strategies working?” can provide students with a structure that requires them to be metacognitive. Many students, especially those with special needs can benefit from explicit, repeated instruction in metacognitive strategies. For example, a teacher might begin with a think-aloud to articulate metacognitive thoughts:

> Okay. What am I going to do next on this project? I need to put all the information I’ve collected together into a report. I could put each piece of information on a note card and then organize them into an outline, but that would waste a lot of time making note cards. I could go through my notes and mark each note with a category, then cross out all the notes I’m not going to use. I’ll see how that works.

Although mentioning actual cognitive processes is part of modeling metacognitive processes, it’s important to model thinking processes to affect students’ self-regulating abilities. Modeling learning strategies, such as methods of comprehending texts (e.g., asking questions) or solving word problems (e.g., identifying variables) is an effective method for teaching students learning strategies, but unless awareness, planning, and monitoring of thinking are explicitly addressed, the modeling will not have an effect on students’ metacognition.

Other sources for metacognitive instruction, especially with older students, can be the biographies, journals, letters, and other personal writings of famous experts in the field they are studying. Exposure to the problem-solving strategies of legendary thinkers can be inspirational and informative for students.

After modeling metacognition, the next step is to give students a chance to practice using metacognitive skills with teacher support. Students could do a think-aloud themselves with a partner or in a small group. Listening to how their peers approach complex problems can help all students widen their repertoire of possible strategies.

Finally, using prompts such as, “What can you do first?” “What else might you try?” and “How well is your strategy working?” reminds students to think about their thinking while they are working.

Questions to Promote Metacognition

Awareness

- How am I approaching this task?
- What am I doing as I work on this project?
- What do I do when I don't understand what I'm reading?
- When I encounter a problem, what do I do?
- What do I think about while I'm reading?

Planning

- What kind of a task is this?
- What is my goal?
- What information do I need?
- What problems might come up while I'm working and how might I handle them?
- What strategies will help me?
- What resources do I have?
- How long will the task take?
- What are the smaller tasks within the big project?
- What do I have to do in a particular order and what can I do any time?
- What people and events do I have to coordinate with?
- Who can help me?
- What do I want to learn from this project?

Monitoring

- Is what I'm doing working?
- What don't I understand about the task?
- How could I do this differently?
- Do I have to start over?
- Can I change how I'm working a little to be more effective?
- What can I control about my working environment?
- How can I respond to unexpected challenges?
- What am I learning?
- What can I do to learn more and better?
- Is this the best way to do this?

References

Marzano, R. J. (1998). *A theory-based meta-analysis of research on instruction.* Aurora, CO: McREL. http://www.mcrel.org/PDF/Instruction/5982RR_InstructionMeta_Analysis.pdf*

Tishman, J, E. Jay & D. N. Perkins. (1992). *Teaching thinking dispositions: From transmission to enculturation.* Cambridge, MA: ALPS. http://learnweb.harvard.edu/alps/thinking/docs/article2.html*