Assessing Projects: Assessing Thinking
Assessing Metacognition

Assessment and Thinking about Thinking

Metacognition, or "thinking about thinking" refers to the mental processes that control and regulate how people think. Metacognition is especially important in project work, because students must make decisions about what strategies to use and how to use them. Marzano's (1998) research of 4,000 different instructional interventions found that interventions that were most effective in improving student learning were those that focused on how students think about their thinking processes and on how students feel about themselves as learners.

Assessment plays an important role in the teaching of metacognition. In order for students to control their thinking processes, they must first be aware of them. In *The Earth Moves Under My Feet*, a Unit Plan from *Designing Effective Projects*, 7th grade scientists monitor seismic data on the Web and plot geographic coordinates of real-time earthquake activity. Students use this scientific information to develop Earthquake Preparedness Plans for specific areas. Mr. Cole is going to focus on students' awareness of their data analysis skills in this unit. He begins by modeling how he thinks about data he has collected about seismic activity in Argentina. He explicitly describes how he is finding patterns and drawing conclusions from the information.

He then asks students to work in pairs to analyze their data while thinking aloud. Students are given checklists and asked to take note of those data analysis skills they notice their partners using. While the students are sharing their thinking processes, Mr. Cole takes anecdotal notes about their ability to articulate their thinking processes, noting those students that seem to have the most difficulty so he can work with them later.

At the end of the activity, he asks students to write in their learning logs, responding to the following prompts:

1. What thinking strategies did you use while you were thinking about your data?
2. What thinking strategies did your partner use?
3. How successful were your strategies?
4. What can you try next time?

Mr. Cole uses his anecdotal observations and the information from the learning logs to plan instructional activities that will help all his students improve their awareness of and ability to control and manipulate data analysis strategies successfully, strategies that will help them develop into self-directed learners.

Students learn what is assessed. For too long, many teachers have assumed that students will acquire higher-order thinking skills automatically if they are learning content or are given high-level questions to answer. Unfortunately, that is not always the case. Instruction and assessment in thinking do not happen by accident. Teachers must explicitly teach the kinds of thinking they expect from their students and assess that thinking in a variety of ways in order to ensure that students are developing as thinkers.