Summary

This article begins with a brief explanation of the concept of metacognition. In the simplest terms, metacognition is “thinking about thinking.” Because of the complexity and variance in its usage though, Mills suggests that metacognition is best understood as an “ongoing process that involves reflection and action.” Further, Mills describes that process as having three stages: pre-planning, in which students and/or teachers reflect on one’s own thinking and the task at hand; planning, which includes the development and implementation of a plan; and post-planning adjustments/revision, in which the participant(s) conduct follow-up analysis and identify modifications that allow for more effective future plans. This introductory piece finishes with an assessment of the utility of metacognition, which Mills identifies as being a “key component” in both effective student learning and “smart teaching.”

After this rather abstract beginning, Mills article discusses a variety of concrete methods for employing metacognitive thinking in the college classroom. These techniques are broken down into three sets of activities: those to be used prior to a lesson or class, those employed during the class, and those that are undertaken at the conclusion or after a lesson. Three specific pre-lesson metacognitive techniques are mentioned. The first, “focused listing,” asks students to list, on an index card, all of they know/remember about a key concept. After collecting these cards, the professor can conduct a snap assessment and provide feedback on topics such as misconceptions, average knowledge, and what can or should be done to change future lessons. The second pre-lesson discussed is “directed paraphrasing.” In this activity, students are asked to define, in their own terms, a concept. The final pre-lesson activity is “application cards,” in which students are asked to write on index cards possible applications or examples of a key concept.

Mills also presents three metacognitive activities that can be used during class lessons. The first of these is the “complete a sentence starter,” which can focus on either simplified or more complex prompts. For example, students could be given a prompt that asks them to finish a definition or term identification, or they could be asked to complete a prompt pertaining to a more opened-ended interpretive question. Next, Mills suggests using a compare or contrast exercise; after providing an in-depth examination of two content elements (in a non-comparative manner), the teacher asks students to compare or contrast the two elements. Finally, students can be given a prompt that asks them to support a statement based on evidence taken from lecture, the textbook, outside readings, experience, etc.

Completing the spectrum of activities are metacognitive techniques that can be utilized at the end of a class session. According to Mills, these exercises can range from the very basic to highly complex metacognitive tasks. For example, in a basic application of metacognition students could be required to complete a “minute paper” that asks them “what was the most important thing that you learned today,” or “what important questions from today’s lesson remain unanswered or require clarification.” A more
complex activity suggested by Mills is the “Minute Paper for Papers.” In this exercise, students can be queried about a number of issues pertaining to a paper or assignment that they have just submitted. These questions, which should focus on the students learning processes, can ask them to reflect on what elements of their work were most or least effective or satisfactory, what problems they encountered in doing the assignment, or what changes to either the assignment or their approach to it they might change.

The second main section in Mills’ article deals with using assessments to further develop metacognitive skills in students. Again, the article presents a range of options, from non-graded quizzes to formal assessments and from multiple choice formats to essay exams. In the low stakes range, Mills suggests using multiple choice quizzes that provide students with an opportunity to engage in self-assessment. In such cases students can be asked to work in pairs to discuss the best answers to a series of questions as an exercise in thinking about making knowledge decisions rather than exhibiting mastery of content. Similarly, professors can use a variety of mechanisms, such as personal response systems (clickers), color coded or lettered index cards (visible quizzes), or immediate feedback assessments (scratch-off quizzes) to engage students in these metacognitive exercises. The article also discusses an innovative metacognitive approach to essay exams or questions, which Mills refers to as the “question shuffle” technique. In this exercise, students are asked, after reading the requisite material, to write two potential essay questions pertaining to the readings on an index card. In class, students are paired, and they share their essay question ideas. After discussing them, the students decide which two of the four questions are best. The pairs then exchange their two best selections with another student pair in the room, and the process is then repeated two additional times. Finally, students write responses to a selected best question and when they are done they switch papers, assess their peer’s work, and discuss their responses to the question.

The final element of metacognitive techniques discussed in the article focuses on assessing assessments. Mills argues that too often students receive their exams, papers, or other assignments, look at the score and possibly any written feedback offered by the professor, and then promptly put it away, never to consider it again. In such cases, argues Mills, teachers are missing a critical opportunity to get students to think about the processes that students engage in when learning, and an opportunity to help students improve those processes. To this end, Mills recommends the use of assessment analyses that focus students on the efforts that they made while doing work or preparing for exams. Ultimately, these efforts should get students to think about how they prepared, the actual results of that preparation, and what they might change in the future. Thus, an assessment analysis might ask students, either in discussion or in writing, to describe their study practices, how they applied those during the exam or while doing a paper or assignment, and what they might do instead to improve their preparation for the next assignment. Further, students can be asked to go through exams and analyze each question in terms of its level on Bloom’s taxonomy. Once they have done this, they can also calculate the percentage of the questions related to each of the levels that they got correct. They could also be asked to consider the source base for each question: did it come from the text, a lecture, an additional reading source, etc. With this information, students may be able to more effectively evaluate which parts of the course materials they need to adjust their approaches to. Finally, Mills suggests that professors should
ask students to provide feedback, on the basis of these types of assessment analyses, on how the instructor can better help students to prepare for future assessments.

Applications

Initially, this article begins with an overly abstract and often times vague discussion of theory that suggests that it would offer little in the way of practical application. Relatively quickly though it turns to a discussion of readily usable strategies for incorporating metacognitive thinking into the classroom. In doing so, it offers easily adaptable approaches for a variety of metacognitive exercises for both classroom work and assessment. At several points in this article I found myself quickly coming up with applications for my classroom. For example, in its discussion of in-class exercises, the compare and contrast techniques appeared perfectly suited for my upcoming discussion of the United States and the Soviet Union’s goals at the end of World War Two. Similarly, I recognized the possibility of adapting the article’s discussion of the question shuffle exercise to get my students to come up with their own weekly study/discussion questions for class discussion. While these are two specific examples of immediate application that I recognized, the article is replete with suggestions for employing metacognitive thinking throughout the course and in any content area. Indeed, it is hard to imagine how one could not find some viable application of the techniques discussed in the article. The utility of the article, however, goes beyond the possibilities that it offers for the application of a variety of active learning exercises. Given the importance of metacognition in the development of student learning, as noted in much of the scholarship of teaching and learning, it also offers a practical take on how to introduce this level of deep thinking into any course.

Citations of Interest


