Techniques I Use to Help My Students Think About Their Learning

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A lifelong skill is for students to think about their learning, or be metacognitive about it. Although metacognition ties directly to student success, it is often not taught, and it is a skill that many two-year college students lack. One of my goals is to purposefully structure my courses to help students focus on and be more aware of their own learning.

The three strategies to foster metacognition I use most often are:

1. ConcepTests (or clicker questions)—These multiple-choice questions are asked during a break in lecture, students individually answer them (anonymously), they debate the answer with their peers, and they vote again. These questions allow students to find out how well they understand concepts as they are taught in class.
2. Lecture Tutorials—These published worksheets are completed in class by groups of students and specifically address topics students have difficulties with. They are used after a short lecture to give students the chance to apply what they just learned. Students have the opportunity to teach each other and learn from each other. They can follow other students' thought process and vocalize their own. Again, students find out how well they understand the concepts during class.
3. Online Quizzes—These multiple-choice quizzes test the students on concepts they learned in class, but are completed by students on their own time outside of class. Students can retake them up to three times, with a different selection of questions each time. Students can use them as a way to self-test if they understand the concepts, which is useful both immediately after class as well as a way to study for the exam.

I explain to the students that these techniques give them immediate feedback on how well they understand concepts, helping them to realize that they are in charge of their learning and to determine what topics they need to spend more time on. Another strength of these methods is that they are easy for the instructor to implement. After the initial set up, none of these methods take much time, and there is no manual grading.

A challenge to these techniques is the initial time commitment, which varies. Good ConcepTest questions are difficult to write, but there are some on the SERC website, and you can reuse them in following semesters. Lecture Tutorials are pre-written, but do require creating enough time in class to implement. Setting up and writing good online quizzes also takes time initially, but they can also be reused (and some quiz questions can be used again on exams).

I have several indications that these techniques are effective with my two-year college students. When I ask students after each exam to reflect on how they studied as well as how they could have studied smarter (which is another technique to promote metacognition), students report using many of the strategies I provided, such as reviewing Lecture Tutorials and quizzes and focusing their studying on where their weaknesses were. When I've had students who have taken a class in which I used the online quizzes then take a class where I have not yet developed them, they unanimously asked for the quizzes, even though they require more work from the student. Although some students complained about the time involved, they also saw how valuable the quizzes were to their learning. Finally, as measured by the MSLQ survey instrument, students in my classes do not experience a decline in motivation and attitudes during the semester, as is commonly seen in other introductory classes, which is significant because research is increasingly showing the importance of student affective domain (motivation and attitudes) on their learning.