**Simple Activities that Encourage Student Metacognition**

At the Beginning of the Semester:

* Give a pre-assessment tied to learning outcomes so students are aware of what they don’t know
* Ask students to reflect about the strategies they’ve used in the past to learn similar material. Were those strategies effective? How might they change those strategies for your class?
* Share the learning strategies that typically lead to success in your class and help your students reflect on how they might use them.
* Use specifications grading (Nilson, 2014) to allow student choices in planning

Before Class Time:

* Ask students to spend 10 minutes previewing the assigned reading and to generate 2-3 questions they have about the reading. Direct them to think about these questions during class. Then, after class, direct them to read the assigned reading, continuing to keep those questions in mind.

During Class Time:

* Use think-pair-share reflections, in which students reflect on their own learning individually before sharing in smaller, and then larger groups
* Assign minute papers, where students reflect on a prompt in a stream-of-consciousness fashion. These are especially good to use at the beginning of class as a “check” for class preparation or to prompt discussion. They can also be used at the end of class to help students reflect on topics that may require more review.
* As you’re teaching content, frequently ask students “How are you trying to learn this? What will you do to make sure you remember this?” Most of them have never considered learning as a process, or their own role in it.
* Discuss explicit content connections and ask students to do so
* Connect course content to other fields of study and to real-life applications
* Model your thought and decision process when planning for solving a problem, and model the process that you go through when making sense of what a problem is asking

Before a Test:

* Have them create a practice test and answer the questions as a homework assignment. Use some of the most well-crafted questions on the actual test.
* Use guided reading questions as a homework assignment to supplement textbook reading (see <http://www.improvewithmetacognition.com/developing_student_metacognition_draeger/> and <http://www.curriculum.org/secretariat/files/Oct25Metacognition.pdf> for examples)
* Have students place topics on a chart as you are reviewing for a test, with headings like “I understand this topic well,” “I recognize this topic but need to review more,” and “I have never heard of this before.” (see <http://www.improvewithmetacognition.com/student_metacognition_development_melone> for an example).
* Encourage students to use the study cycle (McGuire, 2015) to guide their studying
* Teach students how to make a good study guide, have them do so and share their study guides with each other

During Tests or Quizzes (great for an early-in-semester low-stakes test or quiz):

* Ask for a judgement of their confidence in the answer they chose. Counsel them that when confidence is low, they should consider changing their answer. When the test is returned, have them reflect on how their confidence judgements are related to their performance (Couchman et al., 2016).
* Use IF-ATs (Epstein et al., 2002). For multiple choice tests, give immediate feedback by letting students scratch off the answer they think is correct, revealing whether or not they chose correctly. Choosing the answer correctly on the first try earns full credit. Choosing it on subsequent tries earns successively less partial credit. This method may also be used in groups (distributed cognition), where the first guess is done individually, then the reasoning for the guesses are talked about in the group.

After a Test:

* Have students complete an exam wrapper, where they reflect on their performance, analyzing how they’ll change their strategies next time (for examples, see: [https://www.cmu.edu/teaching/designteach/teach/examwrappers/)](https://www.cmu.edu/teaching/designteach/teach/examwrappers/%29)
* Have students compare the grade they predicted they’d earn with the grade they actually earned. A large mismatch may indicate poor metacognition.

More Intensive Activities:

* Engage students in a strategy project (Steiner, 2016), which involves choosing, using, and reflecting upon metacognitive study and self-regulation strategies to prepare for a test in a content-area course.
* Assign Stephen Chew’s “How to Study” video series for discussion and reflection (<https://www.samford.edu/departments/academic-success-center/how-to-study>).
* Have students reflect on the results of a self-assessment like the MSLQ (Pintrich, Smith, Garcia, & McKeachie, 1991) or MAI (Schraw & Dennison, 1994)

References

Couchman, J. J., Miller, N. E., Zmuda, S. J., Feather, K., & Schwartzmeyer, T. (2016). The instinct fallacy: The metacognition of answering and revising during college exams. *Metacognition and Learning, 11*(2), 171-185. doi:10.1007/s11409-015-9140-8

Epstein, M. L., Lazarus, A. D., Calvano, T. B., & Matthews, K. A. (2002). Immediate feedback assessment technique promotes learning and corrects inaccurate first responses. *The Psychological Record*, *52*(2), 187.

McGuire, S. (2015). *Teach students how to learn: Strategies you can incorporate into any course to improve student metacognition, study skills, and motivation.* Herndon, VA: Stylus.

Nilson, L. (2014). *Specifications grading: Restoring rigor, motivating students, and saving faculty time.* Herndon, VA: Stylus.

Pintrich, P.R., Smith, D.A.F., García, T., & McKeachie, W.J. (1991). *A manual for the use of the motivated strategies questionnaire (MSLQ)*. Ann Arbor, MI: University of Michigan, National Center for Research to Improve Postsecondary Teaching and Learning.

Schraw, G. & Dennison, R.S. (1994). Assessing metacognitive awareness. *Contemporary Educational Psychology, 19*, 460-475.

Steiner, H.H. (2016). The strategy project: Promoting self-regulated learning through an

authentic assignment. *International Journal of Teaching and Learning in Higher Education, 28* (2), 271-282.

What metacognitive activities have you tried in your course?

What metacognitive activities would you like to try in your course?

**Additional Resources:**

**Seminal Articles on Metacognition**

Brown, A. L. (1987). Metacognition, executive control, self-regulation, and other more mysterious mechanisms. In F. E. Weinert & R. H. Kluwe (Eds.), *Metacognition, motivation, and understanding* (pp. 65-116). Hillsdale, New Jersey: Lawrence Erlbaum Associates.

Flavell, J. H. (1979). Metacognition and cognitive monitoring: A new area of cognitive-developmental inquiry. *American Psychologist, 34,* 906-911.

Schraw, G. (1998). Promoting general metacognitive awareness. *Instructional Science, 26*(1-2),

113-125.

**Sources for Classroom Activities and Instruction**

Improve with Metacognition website: [www.improvewithmetacognition.com](http://www.improvewithmetacognition.com)

Benassi, V. A., Overson, C. E., & Hakala, C. M. (2014). *Applying science of learning in education: Infusing psychological science into the curriculum*. Retrieved from <http://teachpsych.org/ebooks/asle2014/index.php>

Chew, S. L. (2011). *How to get the most out of studying* [Video series]. Retrieved from

www.samford.edu/how-to-study.

Steiner, H.H. (2016). The strategy project: Promoting self-regulated learning through an

authentic assignment. *International Journal of Teaching and Learning in Higher Education, 28* (2), 271-282.

Tanner, K. D. (2012). Promoting student metacognition. *CBE Life Sciences Education, 11*(2), 113-

120.

**Self-Questions to Promote Faculty Metacognition about Teaching**

Retrieved from <http://www.lifescied.org/content/11/2/113/T3.expansion.html>

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| --- | --- | --- | --- |
| **Activity** | **Planning** | **Monitoring** | **Evaluating** |
| Classroom Session | * What are my goals for this class session? How did I arrive at these goals?
* What do I think students already know about this topic? What evidence do I have for my thinking?
* How could I make this material personally relevant for my students? Why do I think this?
* What mistakes did I make last time I taught this and how can I not repeat these?
 | * What do I notice about how students are behaving during this class session? Why do I think this is happening?
* What language or active-learning strategies am I using that appear to be facilitating learning? impeding learning?
* How is the pace of the class going? What could I do right now to improve the class session?
 | * How do I think today’s class session went? Why do I think that? What evidence do I have?
* How did the ideas of today's class session relate to previous class sessions? To what extent do I think students saw those connections?
* How will what I think about how today's class session went influence my preparations for next time?
 |
| Overall Course | * Why do I think it’s important for students pursuing a variety of careers to learn the ideas in my course? What are my assumptions?
* How does success in this course relate to my students' career goals? How might I reveal these connections to them?
* What do I want students to be able to do by the end of this course? Still be able to do 5 years later?
 | * In what ways am I effectively reaching my goals for students through my teaching? How could I expand on these successful strategies?
* In what ways is my approach to teaching in this course not helping students learn? How could I change my teaching strategies to address this?
* How is my approach to teaching this course different from last time I taught it? Why?
 | * What evidence do I have that students in my course learned what I think they learned?
* What advice would I give to students next year about how to learn the most in this course?
* If I were to teach this course again, how would I change it? Why? What might keep me from making these changes?
* How is my thinking about teaching changing?
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