

Encouraging Metacognition in the Classroom

Yale Center for Teaching and Learning

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Metacognition is the process of “thinking about thinking,” or reflecting on one’s personal habits, growth in knowledge, and ways of learning. Theorized by psychologists including William James, Jean Piaget, and Lev Vygotsky (Fox and Risconscente, 2008), metacognition is prioritized in modern educational research for the ways it helps students learn and become more self-directed (Ambrose et al. 2010). Instructors can help students metacognate in order to cultivate their motivation, reflect on their best learning practices, and practice transfer of skills.

Examples

- At the end of class, an instructor passes out index cards and asks students to list their “muddiest point” from class that day. The instructor collects the index cards and begins the next class summarizing the most confusing points identified by the students. The instructor alters instruction to address these points and asks students whether they remain points of confusion.
- Students turn in an essay assignment. After they receive their grades, they are asked to review the steps they took to develop the assignment, identify what was most and least effective, and consider how they could improve their writing in future assignments.
- Students receive back a graded exam alongside an exam wrapper that asks them to write about how they studied, what content came easiest and hardest, what question formats were easiest and hardest to answer, and how they plan on bolstering their weaker areas of knowledge.
- Students keep a weekly journal. In the journal they document their study habits and success with various assignments and class activities. At the midpoint and end of term, students review their journals to assess what study habits and preparations led to the best performance in assessments and class time.
- An instructor places students in groups and asks them to produce concept maps of content from class. Groups share their maps, discuss differences, and defend their choices

Recommendations

- **Use Reflection Questions:** After teaching a major concept or skill, the instructor can encourage students to monitor their learning by having them answer questions individually or in groups like: “what did I know about this topic before the class?” “What have I just learned?” “How did I learn it?” “What do I still need to learn?” “What is most confusing or challenging about this concept / skill?” These questions can come in the form of pre-assignment questions, journals, 1-minute papers, or when carefully controlled, whole class or group discussions.

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- **Use Exam Wrappers:** After a major assessment, instructors can encourage students to monitor their learning by answering questions, either in class or as an out-of-class assignment like: “which study habits or strategies were least effective for my learning?” “which study habits were most effective for my learning?” “what content and concepts did I know best, and how / when did I study for them?” “What content / concepts am I still struggling with?” This brief assignment, called an exam wrapper, invites students to describe how they prepared, whether or not they thought their preparations were effective, and how they will plan to prepare for future assessments.
- **Incorporate Metacognition into Assessments and Evaluations:** Instructors can incorporate questions on evaluations that enable students to reflect upon the connections between their knowledge and study efforts, such as: “Which of these concepts took the most effort for me to learn? What study habits did I deploy?” “What classroom activities made this content the clearest for me? Why did I respond well to these specific activities?” “What ideas am I still struggling with? What learning techniques might help me clarify this content?” These questions should be included together in a separate section of the assessment or exam.
- **Engage Students with Active Learning:** Because they help students make connections and approach content in a variety of different ways, active learning techniques lend themselves to metacognition. Exercises like think-pair-share, jigsaw discussion, role play, and debate help students not only articulate their knowledge, but communicate it in multiple ways while experiencing their own growing mastery.

Further Reading

Kaplan, M., Silver, N., Lavaque-Manty, D., and Meizlish, D., eds. (2013). *Using Reflection and Metacognition to Improve Student Learning*. Sterling, VA: Stylus.

References

Ambrose, S., Bridges, M., Lovett, M., DiPietro, M., & Norman, M (2010). *How Learning Works: 7 Research – Based Principles for Smart Teaching*. San Francisco: Jossey-Bass.

Fox E and Riconscente M. (2008). Metacognition and Self-Regulation in James, Piaget and Vygotsky. *Education Psychology Review* 20:373-389.