

The *Teaching Professor eNewsletter*¹, edited by Rick Reis at Stanford, is a good, regular source of wisdom about teaching in universities. Here is a slightly adjusted example, discussing *critical thinking*, reposted with permission.

Critical Thinking: What is It?²

It's safe to say we all want our students to become better critical thinkers. Most of us have an intuitive sense for critical thinking - we know it when we see it. But beyond that general intuitive sense, what constitutes critical thinking? What elements do we seek to cultivate if we want to develop our students' critical thinking abilities? The literature on critical thinking goes all the way back to Socrates, though much contemporary scholarship on critical thinking in education builds on a study by Glaser (1941) in which he identified three aspects of critical thinking: a thoughtful attitude or disposition, a range of reasoning skills, and the ability to apply those skills. Later scholars, such as Paul (1995) and Halpern (2003), added a fourth element: a habit of reflecting upon one's own thinking to continually improve it. Halpern is a former president of the American Psychology Association, and her book *Thought and Knowledge* brings a great deal of empirical evidence to bear in validation of this four-part framework. As a result, the critical thinking framework we have found the most useful consists of four major elements:

1. A critical thinking attitude
2. The ability to use specific critical thinking skills
3. The ability to apply those skills in new contexts
4. Habits of reflection upon one's own thinking

To lay the foundation for discussions about how to cultivate these four elements of critical thinking, let's unpack each of them briefly.

1. Critical Thinking Attitude

According to Halpern (2003), a critical thinking attitude is a habitual willingness or commitment to engage in purposeful deliberation about claims or ideas rather than simply accepting them at face value. It is the foundation of critical thinking behavior and consists of the willingness to (a) engage in and persist at a complex task, (b) use plans and suppress impulsive activity, (c) remain flexible or open minded, (d) abandon nonproductive strategies, and (e) remain aware of social realities (such as the need to seek consensus or compromise) so that thoughts can become actions. Once these pieces are in place-once students are motivated to think critically-then they are ready to acquire specific thinking skills.

2. Ability to Use Specific Critical Thinking Skills

Most authors agree that critical thinking is an umbrella concept comprising many specific skills, but ideas about which skills belong under the umbrella vary from author to author. Paul and Elder (2008) described the critical thinker as one who raises vital questions and problems, formulates them clearly and precisely, gathers and assesses relevant information, then uses abstract ideas to interpret that information and draw well-reasoned conclusions. The critical thinker then tests those conclusions against relevant criteria, thinks open-mindedly within alternative systems of thought, recognizes assumptions as well as implications and consequences, and communicates effectively with others. In contrast, Halpern (2003) used somewhat more technical language. In her view, critical thinking includes deductive inference, argument analysis, hypothesis testing, understanding probability, decision making, problem solving, and creative thinking. Clearly, there is a great deal of overlap

¹ Item #1186, at <http://www.stanford.edu/dept/CTL/Tomprof/index.shtml> .

² Adapted from Chapter 1, *Critical Thinking and Engagement: Creating Cognitive Apprenticeships With Team-Based Learning*, by Michael Sweet and Larry K. Michaelsen in the book, *Team-Based Learning in the Social Sciences and Humanities: Group Work That Works to Generate Critical Thinking and Engagement*, edited by Michael Sweet and Larry K. Michaelsen. Published by Stylus Publishing

between these taxonomies, but to the classroom teacher, teasing out differences at this level can feel like nit-picking. The point here is to identify precisely the intellectual skills we want our students to acquire in our classrooms and to use our content as the landscape where these skills will be learned and used.

The good news is that we do not need to neglect our content and start teaching classes exclusively about how to think critically. In fact, not only can we teach critical thinking skills in the contexts of our disciplines, but it works best when we do. A meta-analysis of the research on critical thinking instruction found that critical thinking skills are actually best taught alongside or in combination with concrete disciplinary subject matter (Abrami et al., 2008). Across the 117 studies included in this analysis, subject matter courses with explicitly stated critical thinking learning goals had greater pre/post-critical thinking effect sizes than critical thinking courses whose only goal was to teach critical thinking with no specific disciplinary subject matter.

3. Ability to Apply Critical Thinking Skills in New Contexts

What originally was referred to as the ability to apply critical thinking skills in new contexts, cognitive psychologists now call transfer. Regardless of the label used, as teachers we clearly want to avoid filling our students' heads with inert knowledge, that is, knowledge that one has no sense of when or how to use. Alfred North Whitehead first described inert knowledge in 1929, and it stands in marked contrast to knowledge that is easily retrieved and used to guide one's actions in the moment.

To learn to do this, Halpern (2003) argues that students require structure training where they learn the important cues in a situation in which a given thinking skill is appropriate. This way, they'll be able to recognize those features in new contexts and be prompted to use the right thinking skill at the right time.

4. Habits of Reflection Upon One's Own Thinking

Finally, having acquired a critical thinking attitude, learned some critical thinking skills, and applied those in new contexts, good critical thinkers are "*brave enough to risk being wrong, and wise enough to realize that much can be learned from errors and failed solutions*" (Nelson, 2005, p. xiv). Simply put, good critical thinkers will think about their own thinking, which educational research calls metacognition. As this kind of thinking increasingly approximates the kind of thinking common to your discipline, your students can more accurately be considered cognitive apprentices to your field.

To an experienced teacher, this four-part framework of critical thinking feels comprehensive; it includes motivation, specific thinking skills, the ability to transfer those skills, and habits of reflection to keep the process in constant evolution. As teachers we are powerless to help our students learn to think more effectively **unless** we are able to see and hear their thinking. Once we know whether and how they are actively engaged with the content, we can more fully diagnose and participate in their development as thinkers.

How then can we use classroom time to best stimulate that engagement? How can we organize classroom activities to give students the kind of intellectual participation in our fields that will not only reveal their thinking to us, but also help them firmly grasp and make use of, the intellectual tools vital to our disciplines? Addressing these crucial questions should inform your choices of pedagogy, and help balance the need to cover material against the need to support students's growth towards maturity in your discipline.

References

- Abrami, P.C., Bernard, R. M., Borokhovski. E., Wadem, A., Surkes, M. A., Tamim R, Zhang, D. 2008. Instructional interventions affecting critical thinking skills and dispositions: A stage 1 meta-analysis. *Review of Educational Research*, 78(4), 1102-1134.
- Glaser, E. M. (1941). *An experiment in the development of critical thinking*. New York, NY: Teachers College, Columbia University.
- Halpern, D.F. (2003). *Thought and knowledge: An introduction to critical thinking* (4th ed.). Mahwah, NJ: Erlbaum.
- Neslon, J. (2005). *Cultivating judgment: A sourcebook for teaching critical thinking*. Stillwater, OK: New Forums Press.
- Paul, R. (1995). *Critical thinking: How to prepare students for a rapidly changing world*. Santa Rosa, CA: Foundation for Critical Thinking.
- Paul, R., & Elder, L. (2008). *The miniature guide to critical thinking: Concepts and tools*. Tomales, CA: Foundation for Critical Thinking Press.

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