

WORKSHOP: Enhancing Students' Critical Thinking Skills

Workshop Presenters

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Being a critical thinker involves more than cognitive activities such as logical reasoning or scrutinizing arguments for assertions unsupported by empirical evidence. Thinking critically involves our recognizing the assumptions underlying our beliefs and behaviors. It means we can give justifications for our ideas and actions. Most important, perhaps, it means we try to judge the rationality of these justifications. We can do this by comparing them to a range of varying interpretations and perspectives. We can think through, project, and anticipate the consequences of those actions that are based on these justifications. And we can test the accuracy and rationality of these justifications against some kind of objective analysis of the “real” world as we understand it. (13-14)

--Stephen Brookfield, *Developing Critical Thinkers: Challenging Adults to Explore Alternative Ways of Thinking and Acting*

Critical thinking is a form of problem solving, but a major difference between the two is that critical thinking involves reasoning about open-ended or “ill-structured” problems, while problem solving is usually considered narrower in scope. [...] Thus, in critical thinking, the goal is not to find and execute a solution but to construct a *plausible representation of the situation or issue that could be presented in a convincing argument*. [...] The process of developing support for a position most clearly distinguishes critical thinking from problem solving. (28-29, emphasis original)

Education for critical thinking, viewed developmentally, challenges students, but it also challenges faculty: to extend their own intellectual inquiries beyond traditional disciplinary boundaries, to make room for extended inquiries in their teaching, and to encourage students to consider critical issues arising from the subject matter of the course. (70)

--Joanne G. Kurfiss, *Critical Thinking: Theory, Research, Practice, and Possibilities*

A novice often learns information and skills in formal or informal instruction by observing an expert while participating at a comfortable but slightly challenging level [...] in the problem's solution. Wertsch and Stone (1979) referred to such teaching and learning as “proleptic instruction.” In this process a novice carries out simple aspects of the task as directed by the expert. By actually performing the task under expert guidance, the novice participates in creating the relevant contextual knowledge for the task and acquires some of the expert's understanding of the problem and its solution. Proleptic instruction integrates explanation and demonstration with the learner's participation in the instructional activity. (101-102)

The expert revises the scaffolding for learning as the novice's capabilities develop, adjusting the support for the novice's performance to a level just beyond that which the novice could independently manage. (116)

--Barbara Rogoff & William Gardner, “Adult Guidance of Cognitive Development”

Citing Joanne Kurfiss on promoting critical thinking in disciplinary courses, John Bean identifies three of her major points:

- Problems, questions, or issues are the major points of entry into the subject and a source of motivation for sustained inquiry.
- Courses are assignment centered rather than text and lecture centered. Goals, methods, and evaluation emphasize using content rather than simply acquiring it.
- Students are required to justify their ideas in writing or other appropriate modes. (88)

He suggests, with these principles in mind, that the first task in teaching critical thinking “is to develop good problems for students to think about. Tasks can range from major disciplinary issues down to tiny questions about the meaning of a key passage in a course reading”(5).

A curricular example

Course descriptions of disciplinary courses taught in Fall 2004 at Princeton University offer examples of these “good problems” from a variety of disciplinary perspectives:

- In his description for an introductory computer science course, Professor Kernighan, noting that computers are “all around us,” asks, “How does this affect the world we live in?”
- In their introduction to a 300-level French course, Professors Huet and Blix make the claim that literary texts “represent and often question relations of power and cultural norms, but as a form of knowledge, literature is itself implicated in power relations.”
- In the description of an engineering lab course on the conversation of art, Professor Scherer asks, “How do environmental factors (acid rain, ice, salts, and biota) damage sculpture and monuments made of stone and masonry?”
- Professor Zelizer, in her introduction to a 200-level Sociology course, asserts that from the course’s perspective, economic life “is as social as religion, family, or education.”

A co-curricular example

Student consultants working for the McGraw Center at Princeton have the opportunity to address “good problems” and to use critical inquiry skills developed in the classroom in a co-curricular setting. With the guidance of a professional consultant, these student consultants meet with other undergraduates to help them hone the reading, note taking, time management, and exam preparation skills necessary to be successful at Princeton. In weekly meetings, student consultants share details of their consultations, reflect on the choices they made in those consultations, invite comment and critique, and then synthesize the discussion to determine what changes, if any, they would make to their practice in subsequent consultations.

In the process, student consultants develop further the metacognitive skills they already use to be successful students. They engage not only in the practice of studying, but also in the analysis and evaluation of what constitutes good practice, thereby enhancing it.

Selected Bibliography

Baron, Joan Boykoff and Robert J. Sternberg, Eds. *Teaching Thinking Skills: Theory and Practice*. New York: Freeman, 1987.

Bean, John. *Engaging Ideas: The Professor's Guide to Integrating Writing, Critical Thinking, and Active Learning in the Classroom*. San Francisco: Jossey-Bass, 1996.

Bransford, John D. et al, Eds. *How People Learn: Brain, Mind, Experience, and School*. Washington, D.C.: National Academy Press, 1999.

Brookfield, Stephen D. *Developing Critical Thinkers: Challenging Adults to Explore Alternative Ways of Thinking and Acting*. San Francisco: Jossey-Bass, 1987.

Kurfiss, Joanne G. *Critical Thinking: Theory, Research, Practice, and Possibilities*. ASHE-ERIC Higher Education Report No. 2. Washington, D.C.: The George Washington University, Graduate School of Education and Human Development.

Langer, Ellen. *The Power of Mindful Learning*. Cambridge, MA: Perseus Books, 1997.

Paul, Richard. *Critical Thinking: What Every Person Needs to Survive in a Rapidly Changing World*. Rohnert Park, CA: Center for Critical Thinking and Moral Critique, 1990.

Perry, William. *Forms of Intellectual and Ethical Development in the College Years: A Scheme*. 1968. San Francisco: Jossey-Bass, 1999.

Rogoff, Barbara and William Gardner. "Adult Guidance of Cognitive Development." In ed. Barbara Rogoff and Jean Lave, *Everyday Cognition: Its Development in Social Context*. Cambridge: Harvard UP, 1984. 195-216.