

## CRITICAL THINKING

by Howard Gabennesch

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What IS it? What is it NOT? What are the benefits? Why is it important? Dr. Gabennesch presents a working definition: "... the use of **rational skills**, skeptical **worldviews**, and **values** to get as close as possible to the truth." He points out that, according to the NSF, "...science education is not producing high levels of scientific literacy in the population...[and] there appears to be only a weak relationship between science knowledge and disbelief in various forms of nonsense." Read more to find out how you can (and why you should) bring more effective critical thinking into your classroom.

"We teach science as a collection of facts and theories about a certain category of phenomena, rather than as a set of principles for understanding the world." "Multidimensional critical thinking is not simply a byproduct of something else. It must be taught." But the widespread trend to teach more critical thinking over the past decades has apparently not improved that skill in our society. "A primary cause for this shortfall is the antiseptic nature of the "critical thinking" typically taught to students. Either most teachers and authors do not possess a highly multidimensional conception of critical thinking themselves, or they are reluctant ... to approach the [many controversial issues]... to which full-fledged critical thinking inevitably leads. The result is the commonplace teaching of quasi-critical thinking."

The author closes with these words: "We should avoid concentrating our skepticism too narrowly [just] on the realms of superstition, pseudoscience, and the supernatural — for the ultimate challenge to a critical thinker is posed not by weird things but by insidiously mundane ones."

To the extent that the process of science is a recipe for critical thinking (CT), how much of this are you doing in your classes? Do you teach your students *how* to think critically? Do you also address controversial issues, and approach them using CT strategies? Do your students apply CT to their thinking in other subjects, or to their personal lives? With the growing number of people in our country who hold views inconsistent with the findings of science, there should be increased effort to teach the rational skills and discuss examples of worldviews and the role of values. If there isn't a concerted effort to do this, we can expect even more people to slip even deeper into their own dreamworlds, and we all will suffer the consequences.

**WE APPEAL TO YOU:** when you can find some time, we would encourage you to read this article, think about ways and areas in your curriculum that you could teach CT, and develop some strategies and lessons to do this. Bring CT to a number of controversial issues (several are suggested in the article, and there are many more in your subject areas, e.g., global warming in Earth Science, practical alternative energy sources in Physics and Chemistry, and embryonic stem cell research in Biology. You can find some material on the ENSI site (mainly in the Nature of Science section). Consider searching the site from the home page, using "critical thinking" as your search words. Do a broader Google search for "teaching critical thinking" or "critical thinking lessons." Build from this, and try to bring CT skills and skeptical world views into your coursework, throughout your course, not just in your introduction. Get creative, and be sure to share with us when you have something that seems to work. We will post your lessons, strategies and other ideas and tips on the ENSI site to share with your colleagues nationwide.