

Ed Sherline  
University of Wyoming  
Department of Philosophy  
331 Hoyt Hall  
Laramie, WY 82071  
307-766-5156  
E-mail: [sherline@uwyo.edu](mailto:sherline@uwyo.edu)  
Teaching Critical Thinking: Skills Versus Attitudes

## Teaching Critical Thinking: Skills versus Attitudes (Including the Virtues of a Reasonable Person in a Critical Thinking Class)

Handout 1: Some resources for teaching critical thinking within an agriculture-based course

### I. Major workhorse texts

These comprehensive texts emphasize the logical skills of critical thinking and include many exercises. They are valuable both as a reference for the instructor and in excerpts (on e-reserve or in a course packet), for the students, though they tend to be more rigorous and so less accessible (without significant instructor assistance) to students.

Copi, Irving and Cohen, Carl. *Introduction to Logic*, 10<sup>th</sup> ed. New York: Prentice Hall, 1998.

Hurley, Patrick. *A Concise Introduction to Logic*, 8<sup>th</sup> ed. Belmont, CA. Wadsworth, 2003.

Salmon, Merrilee. *Introduction to Logic and Critical Thinking*, 4<sup>th</sup> ed. Belmont, CA. Wadsworth, 2002.

II. Comprehensive texts that are more accessible to students and balance logical skills with rhetorical analysis of popular culture and politics to a greater degree than the workhorse texts.

Moore, Brooke Noel and Parker, Richard. *Critical Thinking*, 7<sup>th</sup> ed. McGraw-Hill, 2003.

Kahane, Howard and Cavender, Nancy. *Logic and Contemporary Rhetoric: The Use of Reason in Everyday Life*, 9<sup>th</sup> ed. Belmont, CA. Wadsworth, 2002.

III. Supplementary texts for courses that include a component on critical thinking. These shorter texts emphasize the logical skills of critical thinking and include exercises.

Epstein, Richard. *The Pocket Guide to Critical Thinking*, 2<sup>nd</sup> ed. Belmont, CA. Wadsworth, 2003.

Munson, Ronald and Conway, David. *Basics of Reasoning*. Belmont, CA. Wadsworth, 2001.

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Handout 2: An inventory of the basic skills needed for understanding and evaluating arguments in teaching critical thinking across the curriculum.

This inventory was compiled from the following three texts: Copi and Cohen, Hurley, and Salmon (see Handout 1 for full references to these texts). Discussion of these skills can be found in the first chapters of these texts. This inventory presupposes an argument-based approach to critical thinking, in which the central learning goals are to identify, analyze, evaluate, and compose arguments. I haven't listed all of the essential argument-based skills of critical thinking, but only the minimal ones needed in incorporating critical thinking into agricultural curricula. So, this list avoids technical skills and concepts of logic that would require extensive classroom time.

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Recognize when evidence is required to support an assertion.

Distinguish between the truth of sentences and the support they would provide for other sentences if they were true.

Sensitivity to different uses of language. That is, be able to recognize arguments and distinguish them from explanations, descriptions, narratives, and other uses of language.

Isolate component arguments in complex debates. Be able to identify the structural relationship among the arguments.

Identify the parts of arguments (premises and conclusions).

Distinguish between deductive and inductive arguments.

For deductive arguments, be aware of the distinguish between criticizing an argument because of its form (structure) and criticizing an argument because it relies on a false premise.

For inductive arguments, be able to determine whether they are strong or weak.

Supply missing premises (especially plausible generalizations) that are unstated.

Identify informal fallacies in arguments. Know why they are fallacies. Avoid formulating fallacious arguments.

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Handout 3: Some open questions to use as prompts in teaching critical thinking within an agriculture-based course.

### **Value Questions**

What is the value, if any, of biodiversity? What is the best way to promote the value of biodiversity?

What is ethical treatment of nonhuman animals for research? For food? For work?

Do we have a moral obligation to insects? If so, what is the content of this obligation, and on what value is it based?

What are ethical issues pertaining to our extraction and use of natural resources (e.g., water, soil, air, and genes) in the processes of agriculture, fisheries, forestry, grazing, mining, and manufacturing?

What are our obligations to future generations with regard to the use of non-renewable resources?

### **Domestic Policy Issues**

Should the government protect family farms from competition with factory farms?

Should the government continue leasing grazing land at a cost below its market value?

Should the government be in the business of influencing the price of milk and other agro-products?

What is an acceptable level of odor for hog farms?

Should the government protect endangered species? If so, to what extent?

Should cloning be banned?

Should the government ban the use of non-native biological control agents?

What is an acceptable level of risk of environmental disaster for pest management ?

Should the government ban the use of bovine growth hormone?

Should the government regulate the safety of food products for consumers? If so, how?

Who owns seeds? Who owns genetically engineered organisms?

### **Foreign Policy Issues**

What, if anything, should rich nations do to help developing nations address problems such as famine and overpopulation?

Should the government protect domestic agricultural operations from foreign competition?

## Teaching Critical Thinking: Skills versus Attitudes (Including the Virtues of a Reasonable Person in a Critical Thinking Class)

Handout 4: Some tips and activities for promoting open-mindedness and fair-mindedness

*Note: There are certainly many other attitudes that are essential to being a reasonable person, and many of the general strategies apply to them as well.*

Open-mindedness as I define it here is a willingness to reconsider one's opinion in light of further evidence and reasons.

Fair-mindedness is trying to know one's own predilections and take them into account in evaluations.

### General Strategies

- Wax philosophical. Incorporate philosophical questions/issues/problems into your course.
- Use open question. Don't go fishing for answers. Take on genuinely open issues. Perhaps the best situation is where you as an instructor regard the question as open, and you find it genuinely perplexing.
- Use controversial questions. This will increase the chance that students have an opinion on the question, and that they have biases, prejudices surrounding their opinion.
- Be an exemplar of open-mindedness and fair-mindedness.
- Use discussion and writing.
- Give the students time to think and write about the question.

**Activities that promote open- and fair-mindedness** (these come from many different instructors as well as discussion in the session).

## **Controversial Readings**

Have students read and then discuss controversial texts.

## **Role playing**

Have students role play a perspective on an issue—put themselves in someone else’s shoes. Role playing encourages each student to come up with new evidence and reasons that might challenge his/her opinion, and to take this new evidence seriously.

## **Persuasion exercises**

- Search for common ground among opposing viewpoints
- Make concessions to the opponent
- Reject/avoid false dilemmas (look for different paths besides black/white)

## **Discussion toward consensus**

Put students in discussion groups composed of students with diverse opinions and ask them to reach consensus on an issue.

## **Present the Opposition**

Have students present a view to the class that they (the presenters) reject. We have a natural tendency to look sympathetically on what we are presenting/teaching. It might be helpful for you (the instructor) to role-play this first, taking a view you don’t accept.

## **Mock trial/Disputation**

Have students defend a position that they reject, or prosecute a position that they accept.

## **Question Authority**

Ask the student to identify an authority figure he/she greatly admires. Then have the student identify a view of this figure that he/she questions or rejects, and have the student give reasons for questioning/rejecting the view. Or, ask the student to identify an authority figure he/she detests. Then have the student identify at least one view of this figure that he/she accepts, and have the student give reasons for accepting the view.

## **Secret Switcheroo**

Assign the students a paper in which they take a stand on a controversial issue and provide evidence/arguments for their stand. As soon as the students hand in the assignment, give them, as a surprise assignment, the task of writing a second paper in which they take the opposing side.