

Exercise No. 2

Critical Thinking

Objective: The major objective of this exercise is to give you an opportunity to practice using the above ideas and concepts by applying them to one of the course readings.

Exercise: Select and read an article that deals with the topic of your case. The article may be from the scientific (peer reviewed) literature or from the popular press (e.g., *Newsweek*, *Time Magazine*, etc.) and then answer the following questions, remembering that in many cases, there is no "right" answer. Please be sure to answer the entire question.

Questions for students:

1. What is the topic or thesis of this article?
2. What argument/conclusion does the author make?
3. What evidence does the author give to support his argument, and what is the source of that evidence? Is it convincing? Dependable? Why or why not?
4. Who do you think may have authored this piece? (i.e., to what group might they belong? Or if you prefer, what axis is s/he trying to grind?)
5. Are there any statistics presented in this work? If there are statistics, are they deceptive? In what way?
6. Is any significant information omitted that might make the argument more convincing?
7. Are there any ambiguous words or phrases? If so, what are they?
8. Are there any fallacies in the reasoning? (name-calling, oversimplifications, etc.)
9. Are there any hidden or obvious biases? If so, what are they?
10. What do you think? Is this a reliable and convincing piece? Do you agree with the author?

Date Due: In sections on either January 17 or 19.

Critical Thinking Handout

Evidence

1. What sorts of evidence or reasons does the author provide (beliefs, data, statistics metaphors and other statements) to support or justify conclusions? How good is the evidence? Is it absolute? true? dependable? Why should you believe it? Is it fact or opinion? Is the evidence based on appeals to authority, testimonials, intuition, case studies, research studies, or analogies to support reasoning and conclusions?
2. What is the source of the evidence? Who is speaking and what is their agenda? Ex: How do the politics/position of the author influence how s/he presents information or what information s/he chooses to present? Who funded the study from which certain conclusions were drawn? For example, in the case of Pacific Salmon— might the research and “facts” offered by research supported by the Bonneville Power Administration differ from that of the Save Our Wild Salmon Coalition?
3. Are the statistics (evidence expressed as number) deceptive? Many are! Ex: Omission (what further info do you need before you can judge the impact of the statistics?) concluding one thing and proving another (paying attention to the wording of statistics and wording of conclusion).
4. What significant information is omitted? Ex: Omitted effects, both positive and negative, short and long term; Alternatives — either actions that might be taken in relationship to the topic, or techniques for gathering and organizing info in the argument; context of quotes and testimonials; missing data; details of procedure for gathering data; missing definitions; missing value perspectives; common counter-arguments; origins of facts alluded to in argument; benefits accruing to the author for her advocacy or testimonial. Have all factors been considered in forming the conclusion?

Ambiguity, Fallacy and Methods

1. What words or phrases are ambiguous? We often misunderstand what we read because we presume that what words mean is obvious. Meanings that appear obvious may not be; lack of definitions – words can be flexible and thus confusing— Ex: Your idea of “moderate effects” may depend on your point of view. Especially important to define your terms when considering the key terms of the issue— ex: obscenity. Watch for loaded language— justice, welfare, reform, extreme, out of control, etc.
2. Are there fallacies in the reasoning? Reasoning should be rejected when it: attacks a person or a person’s background instead of the person’s ideas, oversimplifies, diverts attention from the issue, appeals to questionable authority, confuses what should be and what is, reflects a search for perfect solutions (solution is only good if totally good— environmental clean-up program no good if some pollution remains), or begs the question (requires that the conclusion be true to prove the conclusion). Do the facts and the reasoning support the conclusions?
3. Question the methods by which conclusions have come to be formed. Are the conclusions or “facts” based on sweeping generalizations? Are case studies that are used as the basis for broader conclusions representative? If scientific research is at the heart of an issue, was the research adequately performed including the use of a large enough sample size, a control group, and so on?

Bias and Values of the Author

What are the value assumptions or biases? What is the author’s frame of reference or beliefs about how the world should be? Are there hidden or unstated ideas that are being taken for granted, that are influential in determining the conclusion, are necessary to the logic of the reasoning, and are potentially

deceptive— Usually found in prescriptive arguments. How might the author's bias taint their conclusions or influence the interpretation of results?

What do you Think?

Is the argument clear and well substantiated? How does this article "fit" with other things you've read or experienced? What might be the implications of the author's argument? How might this piece apply to the topic you're interested in o you agree with the author's conclusions?

When considering a broadly-defined topic – looking at a variety of sources as you will do in your case study (as opposed to a single source) remember to +1) gather complete information to the greatest extent possible; learn everything that you can about a subject which included understanding all key terms and concepts; and 2) try to understand the big picture. In other words, think in a larger scale than you may be accustomed to. Think comprehensively, in terms of whole systems. When considering an environmental issue, it is often inadequate to focus only on the economics or the biophysical concerns while ignoring the impact of race, gender ,power, history, geography and so on to the consideration or solving of a problem.