Critical Thinking: A Definition

Critical thinking is a mode of thinking where the thinker consciously analyzes an issue or problem, while at the same time assessing the thinking process. Critical thinking presupposes rigorous standards and mindfulness in their use. It depends upon effective communication and problem-solving abilities, as well as a commitment to overcome our inherent egocentrism and sociocentrism. Finally, it improves with practice. (Adapted from CriticalThinking.org)
Critical Thinking: Not!

I believe I have omitted mentioning that in my first voyage from Boston, being becalmed off Block Island, our people set about catching cod and hauled up a great many. Hitherto I had stuck to my resolution of not eating animal food, and on this occasion, I considered with my master Tryon the taking of every fish as a kind of unprovoked murder, since none of them had or ever could do us any injury that might justify the slaughter. All this seemed very reasonable. But I had formerly been a great lover of fish, and when this came hot out of the frying pan, it smelt admirably well. I balanced some time between principle and inclination, till I recollected that when the fish were opened I saw smaller fish taken out of their stomachs. Then thought I, if you eat one another, I don’t see why we mayn’t eat you. So I dined upon cod very heartily and continued to eat with other people, returning only now and then occasionally to a vegetable diet. So convenient a thing it is to be a reasonable creature, since it enables one to find or make a reason for everything one has a mind to do. Benjamin Franklin, Autobiography
Features of Thinking Critically about Arguments

Overview of an Argument

- Awareness of Point of View
- Awareness of Purpose and Audience
- Statement of Central Question or Issue
- Understanding Key Concepts

Internal Elements of an Argument

- Deduction: Awareness of Inferences and Assumptions
- Induction: Analysis of Information and Evidence
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Overview of an Argument

- University is given 760 acres, 400 of which are designated to be restored and preserved, 360 of which are buildable. In 15 years, the 360 acres are built out, and the school is still growing and needs to find more space for buildings. The 400 acres that are to be preserved are on the table. Consider the following points of view: what differing audiences and purposes would this person or group address, what might their thesis be, and what evidence would be most effective in achieving the purpose?

- President of the University who is charged with growing the institution

- Environmental Groups that brokered the designation of 400 acres to be preserved

- Students (or faculty) who support the growth and expansion

- Students (or faculty) who do not support the growth and expansion
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Elements of an Argument

- Definition
- Assumptions
- Premises and Syllogisms
- Deduction
- Sound Arguments (validity)

- Induction
- Evidence
- Examples
- Testimony
- Statistics

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Elements of an Argument: Definition

- Helps answer the question “What is it?”
- Provides clarity for a topic
- Three methods of defining:
  - Synonyms
  - Examples
  - Stipulations
Elements of an Argument: Definition

“In wildness is the preservation of the world.”
Henry David Thoreau, “Walking” (1862)

“Give me a wildness whose glance no civilization can endure,--as if we lived on the marrow of koodooos devoured raw.” Henry David Thoreau, “Walking” (1862)
Elements of an Argument: Assumptions

- Arguments are defended through reasons, examples, data, information, etc.
- Arguments are also founded on assumptions (the beliefs of the writer and/or reader)
- Assumptions can be expressed or can be unexamined and unstated
Elements of an Argument: Assumptions

- Define “Sustainability”
- “Humanity has the ability to make development sustainable—to ensure that it meets the needs of the present without compromising the ability of future generations to meet their own needs. The concept of sustainable development does imply limits—not absolute limits but limitations imposed by the present state of technology and social organization on environmental resources and by the ability of the biosphere to absorb the effects of human activities. But technology and social organization can be both managed and improved to make way for a new era of economic growth.” Our Common Future, p. 8.
Elements of an Argument: Premises, Syllogisms, and Deduction

- **Premises**: stated assumptions used in an argument
- **Syllogism**: joining of two premises to produce a conclusion
- **Deduction**: mental process of moving from one statement through another to a conclusion
Elements of an Argument: Premises, Syllogisms, and Deduction

Major Premise: All human beings are mortal.
Minor Premise: Socrates is a human being.
Conclusion: Socrates is a mortal.
Elements of an Argument: Premises, Syllogisms, and Deduction

Major Premise: The increase in CO2 has caused global climate change.

Minor Premise: Humans are responsible for the increase in CO2.

Conclusion: Humans are responsible for global climate change.
Elements of an Argument: Sound Arguments

- Depend upon two criteria:
  - All premises must be true
  - The syllogism must be valid

- Truth: depends on whether or not the assertion corresponds to reality

- Validity: depends on whether or not the conclusion follows from the premises

- Invalid Syllogism: the premises may be true but may not lead to the conclusion
Elements of an Argument: Premises, Syllogisms, and Deduction

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Elements of an Argument

- Definition
- Assumptions
- Premises and Syllogisms
- Deduction
- Sound Arguments (validity)
- Induction
- Evidence
- Examples
- Testimony
- Statistics

Ask the students to define critical thinking and to give examples of when they use critical thinking skills. On the board, generate a list of characteristics of critical thinking from their responses.

Note that there are many different modes of critical thinking and many different situations where critical thinking skills are used:
- Writing
- Strategic Planning
- Creative Thinking
- Scientific Thinking
- Asking Questions
- Ethical Reasoning

The focus in this lesson is on the use of reason to persuade an audience of a particular point—on analyzing the effectiveness of an argument.

**Slide Two: A Definition**

A definition of critical thinking. Some of the salient points:
- **Conscious analysis**—that is, being aware of the fact that analysis is happening (much of our thinking is not done in a conscious way)
- **Simultaneous assessment of the thinking process**—in order to truly think critically, we must analyze our own thinking process to see if we are being honest, fair, and objective—we must move outside of our own prejudices and perspectives. We must not rationalize.
- **Rigorous Standards**—specific ways of reasoning (deduction, induction) and ways of determining the truth and validity of an argument
- **Mindfulness**—conscious and deliberate use of the standards, and constant checking oneself against these standards
- **Effective Communication** and **Problem-Solving**
- **Egocentrism** and **Sociocentrism**—to rise out of our own perspectives, our own limited views, to become more objective

**Slide Three: Critical Thinking: Not!**

Use Benjamin Franklin quote from his *Autobiography* to differentiate reasoning and rationalizing. In discussion note the following:
- Logic: Fish eat fish, so people eat fish.
- Logic: Fish eat fish, therefore people should eat people.
- Logic: Fish do eat their own young; should people?

Note that Franklin is intentionally playing upon the difference between reason and rationality (writing at the height of the Age of Reason). From *Current Issues and Enduring Questions* p. 52.
Slides Four and Five: Features of Thinking Critically

Primary Features—broken into two parts, a general overview and specific elements of arguments.

Overview of an Argument (Slide Five highlights this part of the discussion)
- Point of View—the perspective from which the argument is written
- Purpose and Audience—who the essay/argument addresses and why (what is the goal of the author of the argument)
- Statement of Central Issue—the thesis or main idea, closely linked to the purpose of the argument
- Key Concepts—the relevant background information or knowledge relevant to the argument
- All of these aspects of an argument help to determine what type of argument and what type of evidence will be persuasive and relevant

Internal Elements of an Argument
- Note that the remainder of the lecture/discussion will discuss and analyze the internal elements of an argument, focusing on two main ways of proceeding in an argument: through Deduction (the mental process of moving from one statement through another to a conclusion) and through Induction (use of information from observations to make a generalization)

Slide Six: Overview of an Argument

Example for Discussion: University is given 760 acres, 400 of which are designated to be restored and preserved, 360 of which are buildable. In 15 years, the 360 acres are built out, and the school is still growing and needs to find more space for buildings. The 400 acres that are to be preserved are on the table. Consider the following points of view: what differing audiences and purposes would this person or group address, what might their thesis be, and what evidence would be most effective in achieving the purpose?

- President of the University who is charged with growing the institution
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Slide Seven: Features of Thinking Critically

Returns to Slide Four and moves on to the next section: Elements of an Argument.
Slides Eight, Nine, and Ten: Elements of an Argument

These slides outline the specific elements of an argument—loosely categorized around Deduction (the elements in the first column, highlighted on Slide Five) and around Induction (the elements in the second column, highlighted on Slide Six). These slides provide a “map” of the lecture/discussion so that the students know where you are going—it allows them to categorize the concepts they are going to learn, which makes the learning easier.

Slide Eleven: Definition

Definitions can happen in many different ways. Sometimes a dictionary definition will be offered, though this is often not the best method for definition (it suggests that the audience does not know the meaning of the word). The point of definition is to connect an abstract word of concept with the audience.

Three useful ways of defining abstract terms or concepts that can connect with the audience:

- **Synonyms:** the use of a different word that has the same (or nearly the same meaning); note that there might be several choices of synonyms (since not all words mean the same thing), and that the choice of the particular synonym advances an argument in a particular way
- **Examples:** an actual manifestation of the word or concept that shows its meaning (the advantage here is that it is concrete and real); again, the choice of the particular example influences the meaning
- **Stipulations:** a circumscription of a word or concept that draws boundaries around it.

Slide Twelve: Definition

Example for Discussion: Famous quote from Thoreau’s essay, “Walking” (published in 1862 just before his death): “In wildness is the preservation of the world.”

- The full quote is this: “The West of which I speak is but another name for the Wild; and what I have been preparing to say is, that in Wildness is the preservation of the World.”
- Question: What does he mean by “wildness”? Come up with a:
  - Synonym (wilderness, untamed)
  - Example (Everglades, Mt Hood in the winter, Jayvon and the frog)
  - Stipulation (any area of at least 100 acres with no roads and no human habitation)
- In my experience, most of the examples students will come up with are set against the human—they will be that which is outside of civilization. You can then ask them: do we all have a bit of “wildness” inside of us? Hopefully, they will say yes. This would be a good time to come back to Point of View—why did all of our definitions seem to focus on wilderness or that which is outside of human control?
- Later he says: “Give me a wildness whose glance no civilization can endure,--as if we lived on the marrow of koodooos [a type of antelope] devoured raw.”
Slide Thirteen: Assumptions

Assumptions are the beliefs of the author (and reader) and can be clearly stated or not; they can also be invisible to the author and reader.

Slide Fourteen: Assumptions

Ask the students to define Sustainability, and then to define Sustainable Development. Then read (or insert into Powerpoint) the definition of Sustainable Development from Our Common Future (p. 8):

Humanity has the ability to make development sustainable—to ensure that it meets the needs of the present without compromising the ability of future generations to meet their own needs. The concept of sustainable development does imply limits—not absolute limits but limitations imposed by the present state of technology and social organization on environmental resources and by the ability of the biosphere to absorb the effects of human activities. But technology and social organization can be both managed and improved to make way for a new era of economic growth.

Some of the assumptions underlying this argument:
- That we can know how much the biosphere can absorb
- That we know the effects of our technologies on the biosphere
- That economic growth is a given
- That sustainability has first and foremost to do with economic growth, and that it can be sustained indefinitely through appropriate technologies and social organizations. What is left out? (discussion of sustaining the human spirit)

Slide Fifteen: Premises, Syllogisms, and Deduction

Define premises and conclusions—syllogisms—and deductive reasoning.

Slide Sixteen: Premises, Syllogisms, and Deduction

One of the most famous syllogisms is the following:

Major Premise: All human beings are mortal.
Minor Premise: Socrates is a human being.
Conclusion: Socrates is a mortal.

Slide Seventeen: Premises, Syllogisms, and Deduction

Another example using Global Climate Change:

Major Premise: The increase in CO₂ has caused global climate change.
Minor Premise: Humans are responsible for the increase in CO₂.
Conclusion: Humans are responsible for global climate change.
Slide Eighteen: Sound Arguments

Discuss how we tell if an argument is sound.

Slide Nineteen: Sound Arguments

Look back at Global Climate Change, and ask the following questions:

- How would we decide if the premises are true? Who would we ask? How would we know? Given that we cannot probably ever be 100% certain of the premises, what is reasonably expected in order to be able to say this is true?
- How would we decide if the premises lead to the conclusion? Recast the syllogism, changing only one word to help the students see the difference between sound and unsound arguments:

Slide Twenty: Sound Arguments

Change the Global Climate Change premises.

- Major Premise: The increase in CO₂ has caused global climate change.
- Minor Premise: Humans are responsible for an increase in CO₂.
- Conclusion: Humans are responsible for global climate change.

- Question: are there other things responsible for the overall increase in CO₂? What role does the human increase play? Is it a major part?

Slide Twenty One: Elements of an Argument

Returns to earlier slide; takes discussion into Induction.

END HERE—See first PowerPoint and Handout for discussion of Induction