Slide 1:

1. **What is critical thinking?**

2. **What skills are encompassed under the term "Critical Thinking?"**

3. **How can we write critical thinking learning outcomes to guide our assessment and instruction?**

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Slide 2:

The challenge is to articulate a conception of critical thinking that:

1. does not apply to everything,

2. can help to elucidate how critical thinking is related to other educational goals, and

3. can guide the formulation of general learning objectives, specific learning outcomes, and consequent assessment methods.

Slide 3:

"Critical Thinking: The systematic evaluation or formulation of beliefs, or statements, by rational standards."
(Lewis Vaughn, *The Power of Critical Thinking,* 2nd edition: New York, Oxford University Press, 2008; p. 4)

Problem: Fails to mention the evaluation of evidence or arguments and so prevents the definition from encompassing important skills such the ability to recognize that a statement may be true even though a particular argument supporting it is weak.

Slide 4:

"Critical thinking is the intellectually disciplined process of actively and skillfully conceptualizing, applying, analyzing, synthesizing, and/or evaluating information gathered from, or generated by, observation, experience, reflection, reasoning, or communication, as a guide to belief and action. In its exemplary form, it is based on universal intellectual values that transcend subject matter divisions: clarity, accuracy, precision, consistency, relevance, sound evidence, good reasons, depth, breadth, and fairness."
(Defining Critical Thinking, A statement by Michael Scriven & Richard Paul for the National Council for Excellence in Critical Thinking Instruction, http://www.criticalthinking.org)

Problem: Too sprawling to easily generate learning objectives or assessment methods.

Slide 5:

"Critical thinking is the process by which we consciously and intentionally work toward
1) a reasoned understanding and evaluation of truth claims,
2) a reasoned understanding and evaluation of the evidence and arguments supporting truth claims, and
3) a clear formulation and an adequate defense of truth claims.
Critical thinking skills are specifically aimed at advancing this process."

A proposed definition.

Slide 6:

Excludes important skills that may in fact advance this process or be essential to some applications of it, but that also equally serve other ends and so stand as basic skills in their own right (e.g. language skills).
2) a reasoned understanding and evaluation of the evidence and arguments supporting truth claims, and
3) a clear formulation and an adequate defense of truth claims.
Critical thinking skills are specifically aimed at advancing this process."

Excludes other important skills and abilities (e.g. subject-specific knowledge, creativity).

Many of the excluded skills and abilities support and rely upon the application of critical thinking skills (e.g. subject-specific knowledge helps us to evaluate truth claims, creativity allows us to generate novel truth claims).

3) a clear formulation and an adequate defense of truth claims.

Critical thinking skills are specifically aimed at advancing this process."

Decision making and problem solving are hybrid skills that involves creative thinking (to generate novel ideas) and critical thinking (to defend truth claims of the sort / "The best decision is," / "The best solution to this problem is").

evidence and arguments supporting truth claims, and

3) a clear formulation and an adequate defense of truth claims.

Critical thinking skills are specifically aimed at advancing this process."

"Critical thinking is the process by which we consciously and intentionally work toward

1) a reasoned understanding and evaluation of truth claims,

2) a reasoned understanding and evaluation of the evidence and arguments supporting truth claims,

Truth claims are distinguished from evidence and arguments.

We can understand a claim without understanding the evidence or argument supporting it.

We can agree with a claim while rejecting the evidence or argument supporting it.

"Critical thinking is the process by which we consciously and intentionally work toward

1) a reasoned understanding and evaluation of truth claims,

2) a reasoned understanding and evaluation of the evidence and arguments supporting truth claims,

Understanding is distinguished from evaluation.

We can understand a claim or an argument without evaluating it.

Understanding and evaluation are equally important to critical thinking.

"Critical thinking is the process by which we consciously and intentionally work toward

1) a reasoned understanding and evaluation of truth claims,

2) a reasoned understanding and evaluation of the evidence and arguments supporting truth claims,

"Reasoned" understandings and evaluations needn't be identical.

The goal of evaluation is to encourage students to form their own, reasoned, opinions.

"Critical thinking is the process by which we consciously and intentionally work toward

1) a reasoned understanding and evaluation of truth claims,

2) a reasoned understanding and evaluation of the evidence and arguments supporting truth claims, and

3) a clear formulation and an adequate defense of truth claims.

Formulating a position is distinguished from defending it.

We can formulate a claim without adequately defending it.

Critical Thinking Learning Objectives

Demonstrate a reasoned understanding and evaluation of truth claims.

Demonstrate a reasoned understanding and evaluation of the evidence and argument supporting truth claims.

Formulate and adequately defend truth claims.

Demonstrate a reasoned a) understanding and b) evaluation of truth claims.	Not Subject-Specific (Appropriate to Gen. Ed. Courses)	Subject-Specific (Appropriate to Major / Minor Courses)
Less Difficult	a) Given a truth claim, anticipate its probable consequences. b) Assess a claim by determining whether or not its consequences obtain.	a) Determine whether a claim falls within the rationalist or empiricist school of epistemology. b) Assess an ethical theory by evaluating the judgments that it entails.
More Difficult	a) Explain why a sentence of the form "P, if Q," is not equivalent to a statement of the form "P only if Q." b) Evaluate an "if… then…" statement.	a) Explain the similarities and differences between Rousseau's "General Will" and his "Will of All." b) Assess a scientific hypothesis by designing an appropriate experiment.

Demonstrate a reasoned a) understanding and b) evaluation of the evidence and argument supporting truth claims.	Not Subject-Specific (Appropriate to Gen. Ed. Courses)	Subject-Specific (Appropriate to Major / Minor Courses)
Less Difficult	a) Identify what claims are being taken for granted in an argument. b) Identify common informal fallacies, such as hasty generalization.	a) Set out the infinite regress argument for foundationalism. b) Given a basic version of the teleological argument, evaluate it.
More Difficult	a) Correctly explain the evidence supporting a scientific theory. b) Evaluate a long, complex, chain of reasoning.	a) Explain the role of the principle of sufficient reason in the cosmological argument. b) Critique an economic argument using game theory.

a) Formulate and b) adequately defend truth claims.	Not Subject-Specific (Appropriate to Gen. Ed. Courses)	Subject-Specific (Appropriate to Major / Minor Courses)
Less Difficult	a) Advance a relatively simple hypotheses. d) Defend a hypothesis by appealing to particular set of evidence or sources.	a & b) Answer the question "Is the ethical value of an action determined by its consequences?" and defend your answer by appealing to Mill or Kant.
More Difficult	a) Advance a more sophisticated hypothesis (e.g. one requiring fine distinctions). b) Defend a hypothesis by locating and using appropriate evidence or sources.	a & b) Formulate a scientific hypothesis and defend it by generating and analyzing experimental data.

Useful Verbs for Formulating Critical Thinking Learning Outcomes

	Understand	Evaluate	Formulate	Defend
Truth Claims	Restate Compare Contrast Predict Apply Illustrate Identify	Assess Determine Decide Test Measure Experiment Judge	Estimate Hypothesize Advance Propose Speculate Generalize Infer	Justify Support Argue Defend Convince Demonstrate Calculate
Evidence and Argument	Analyze Paraphrase Summarize Outline Identify Explain Diagram	Assess Evaluate Critique Judge Determine Identify Explain	Naturally, this is a non-exhaustive list.	