

Critical Thinking Skills

(Slide 1) One of the challenges with studying critical thinking is that it's a rather amorphous concept: everyone thinks they know what it means, but when you try to get a more detailed explanation, you're liable to see as many definitions as there are people producing them. Earlier lectures presented an intuitive idea of what we mean by critical thinking, in the process bypassing the problem of definition. The present lecture tackles this problem head on.

(Slide 2) To understand how it does this, think for a minute about what the notion of a definition entails. Normally we think of definitions in terms of necessary and sufficient conditions: something that satisfies the definition of a thing counts as an instance of that thing, and nothing else does. When we encounter concepts that don't appear to be explicable in terms of necessary and sufficient conditions, one approach is to revert to what is known as polythetic classification: something that belongs to a given class has many out of a list of features, but need not have all of them. A third approach is to throw up our hands and claim that definition is not possible for a particular concept. Yet another approach, and this is the one that will be adopted here, argues that the concept being examined is not a single thing, but rather a collection of related things. To use the language that we'll adopt for the rest of the course, we'll say that critical thinking is not one skill, but rather a bundle of skills. We can give a fairly clear account of each of the skills individually, but because of the number of skills in the bundle we can't give a unified account of critical thinking itself. We can only define it by analysis, by breaking it down into individual critical thinking skills and giving an account of each of these, one by one.

This course focuses very much on the practice, rather than the theory, of critical thinking, and the present lecture is something of an exception in this regard. However, by the end of the lecture you'll have learned something very important, namely how to understand the various skills that we'll be focusing on in the course, and how these in combination provide a comprehensive introduction to our subject.

Critical Thinking as a Bundle of Skills

(Slide 3) Let's consider what we mean by a bundle of skills. Here's a picture of fasces, which is a bundle of rods (or sticks of wood) that surround an axe. In ancient Rome, the bodyguards (known as lictors) of senior political officials carried fasces as a sign of their office, and the image has been preserved in Western culture as a sign of political power (and of the force that the law is able to bring on individual citizens). The present picture is from the reverse side of a U.S. Mercury dime, which was the standard design of dimes from 1916 to 1945. The fasces on this dime are balanced by an olive branch, a symbol of peace. In this course we don't really care about dimes or lictors or the symbolism of American political power, but the image is a good one and we'll adopt it as a way of envisioning critical thinking, which is an abstract concept and hence can't be directly portrayed pictorially.

(Slide 4) This image should help us in thinking about the implications of the fact that critical thinking is a bundle of skills. For one thing, there are a lot of skills that count as critical thinking skills, just like there are a lot of sticks in the fascis. We'll consider shortly two reasons why this is the case, but first let's emphasize the fact that in one course it really isn't possible to consider each of those skills separately, so for this course we'll pick a small number to practice. After all, this is just an introductory course, and you'll have plenty of time in your college career (and beyond) to develop other critical thinking skills that we won't have the time to consider here. Imagine that we're putting together the fascis: we select the most suitable sticks from a larger number that we have available. That doesn't mean the other ones couldn't have been used instead, but we had to make a choice, and if we used too many then we just couldn't get our hand around the finished product.

The skills that we'll focus on in this course are essential or foundational skills that you'll practice and build on in a lot of the work you do later on during your college career. If you'll recall, one easy way of thinking about critical thinking is that it is *thinking for yourself*, or developing thoughtful perspectives on a given topic, which you didn't necessarily inherit from others but came up with yourself through a process of considering possible beliefs and deciding whether they're worth your accepting them. This is a complex skill, and one you'll get relatively little practice in throughout this course. Instead, you'll focus your attention now on more basic skills that require less background and disciplinary knowledge but that are essential to the more complex reasoning that will be required of you in subsequent courses.

(Slide 5) It is often possible to rephrase a skill in such a way that we create a new skill. This happens in two types of situations. In one, we can take a general-purpose skill and rephrase it so that it applies to a particular context. Consider the situation where we identify a given general-purpose skill, like *understanding the meaning of words in the context of a passage in a text*. This is a relatively straightforward skill, but an important one. Is it clear why this is a critical thinking skill? Well, it requires a certain sort of problem-solving, but there's no set of rules that you can follow, so there's also an element of creativity required. You need to understand the sense of the passage, even though you don't know one of the key words in it well enough to make the leap to hypothesizing what the word means. Now, we could develop any number of discipline-specific skills that are similar to this one but more narrow, for example in mathematics there's the critical thinking skills of *extracting the meaning of terms from their uses in statements*.

If you've ever done word problems in a math class, you'll understand the importance of this one. In order for mathematics to be useful outside of the classroom, you have to understand when objects or events in the world have a relationship to one another that can be described mathematically. You learn this in the classroom setting by being given statements that describe situations, and you learn to recognize words in those statements that correspond to mathematical concepts. So if you're told that a cookie sheet holds seven cookies left to right and six cookies top to bottom (so it's a seven by six sheet) then you recognize that the word "by" implies you need to use multiplication to figure out how many cookies the sheet will hold.

(Slide 6) There's a related skill that's necessary when learning subjects that require you to use mathematics. Sometimes you're presented in a course with a number of equations, and in word problems you need to decide which equation to use, and consequently which information you need to extract from the word problem, versus which information you can get from other sources (like the list of constants at the end of the book). Thus there is a general-purpose skill of *separating relevant from irrelevant information*, from which we can develop a math-specific skill of *identifying relevant facts, quantities, or conditions that are given or known*.

(Slide 7) Even with general-purpose skills, two skills can be quite similar, but crucially different. Consider the following two skills: (A) *identify and evaluate evidence for a theory*, and (B) *determine relevance of information for evaluating an argument or conclusion*. You'll learn later why skill (B) treats arguments and conclusions together; they're closely related concepts. In any case, a theory might seem like a different beast than an argument, but a theory can be stated as an argument, and so they're really very similar (but distinct) concepts, and likewise the skills are similar.

Determining the relevance of evidence is one aspect of the larger process of evaluating evidence, but so is determining its relative importance as compared to other evidence. So again the skills are similar but distinct. You can see how we could take one skill and start twisting it this way and that, replacing one concept with another, adding or subtracting components, and making the skill more or less general than it had been. Each change produces a different skill.

(Slide 8) It may be worthwhile to briefly summarize where the discussion has led us before continuing. We began by considering what it meant to assert that critical thinking is a bundle of skills, and we introduced the image of the fasces as a visual model for a bundle. We then considered two implications of this view: first, that we can only consider a sampling of critical thinking skills in this course, because there are so many; and second, that the total number of skills is indefinitely large. Clearly the first of these implications results from on the second. Then we considered reasons for the second claim, namely *why* the number of skills is so very large. One reason had to do with the relationship between general-purpose and discipline-specific skills, and the other had to do with the fact that statements of skills can be tweaked in ways large and small so as to produce lots of additional skills.

Next we'll move to two concepts that figure prominently in the subsequent lectures: learning goals and learning outcomes.

Learning Goals and Outcomes

(Slide 9) This course will be built around a particular set of goals and outcomes, and it's important for you, as you proceed through the course, to keep an eye on what skills you're supposed to be practicing in each exercise. To do this it will help to be conversant in the language of learning goals and outcomes. This course is structured around four main learning goals, to each of which a set of outcomes is related. Here you can see the four goals listed, along with some of the outcomes. You'll notice that the goals are identified simply with nouns or noun phrases, and the outcomes with sentences in the imperative mood.

(Slide 10) If you didn't like grammar lessons in English class, here's a brief explanation of the last slide. A noun phrase is a group of words that doesn't include a verb and serves the role of a noun in a sentence. An imperative sentence is one in which the subject "you" is implied but not stated. So, for example, when we say that one of the outcomes of this course is that by the time you're done (and assuming you've earned a passing grade in the course), you'll be able to summarize the explicit content of a text. How is this a critical thinking skill? Well, it's a critical reading skill, and that makes it a critical thinking skill. "Summarize" is an imperative verb, so "summarize the explicit content of a text" is an imperative sentence. "Critical reading" is a noun phrase because it doesn't contain a verb (it's made up of just a noun and the adjective that modifies it) and it can occupy the noun role in a sentence, for example in the sentence "your command of critical reading is good," it is the object of the preposition "of."

It's worth mentioning to those of you who want to major in education (because you'll encounter all these issues again when you start your major coursework) that the term "objective" is sometimes used instead of "outcome." Since these identify things that you'll be able to do at the end of the course, "outcome" may be a more straightforward name, so that's the word used in this course.

(Slide 11) Here's how this relates to our earlier discussion of skills: the learning outcomes are just statements of particular critical thinking skills. That's it. After all this buildup, you get a nice, simple, declarative sentence. And this means that learning goals are really just categories of skills. This is a useful way to think about them, and I'll encourage you to think about them in these terms.

About This Course

(Slide 12) The next lecture will provide a good overview of each of the learning goals for this course. Subsequent units of the course will address them in more detail, and give proper attention to each outcome. Then you'll be asked to practice the skills that these lectures discuss. You'll be given two reading assignments, each of which will be introduced by a short lecture to provide context and tell you what to look for as you read. For the first reading, you're encouraged to do the assignment, but this won't be graded – it's a trial run, basically the weekly homework assignment for the course. Another lecture will provide follow-up discussion of the assignment, so you can check your work and see how you did. Then you're ready for the second assignment, which will count towards your final grade.

So the lectures in the body of this course will be of two types, and you'll see both types in each unit. The first type will discuss three or four critical thinking outcomes, which all fall under the same learning goal; and the second type of lecture will discuss particular readings. Assignments attached to each reading will focus on the outcomes that you're practicing in the unit.

Thus the course will, in a very direct and real sense, be structured around the learning outcomes, and the lectures in individual units will address each outcome in some detail.

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