Deepen Your Knowledge About Critical Questions

Critical questions push arguers to clarify their reasoning about why an argument is justified. Asking critical questions is a way to evaluate the strength of the reasoning behind an argument. If these questions are answered adequately with reliable information, then an argument is strengthened. But if they are not answered adequately, then the argument is weakened.

How Does Asking Critical Questions Help My Students?

Asking critical questions enables your students to look for weaknesses in arguments. These types of questions go hand-in-hand with argument schemes: when a student understands the assumptions on which an argument is based (i.e., the argument scheme), then she or he can ask questions to probe whether the arguer has addressed those assumptions. *But a student can also ask the same questions to strengthen his or her own argument, and to anticipate counterarguments. It's good practice to have students ask critical questions about their own arguments, as well as those made by others.*

An Example: *Argument from Authority*

Following is an example from an *argument from authority:*

> *Calvin is a tourist from the United States on vacation in Amsterdam. One day he gets lost and asks a licensed tour guide whom he spots on the street for directions to the Central Station. The guide tells him that it's five blocks to the east, in another section of town. Calvin presumes that the tour guide knows Amsterdam's geography and follows her directions.*

If Calvin was asked about the location of the Central Station after speaking with the tour guide, his "claim" would probably be that "the Central Station is five blocks to the east, in another section of town." He would base that claim on the evidence that "the tour guide told me that it's five blocks to the east, in another section of town." The licensed tour guide is presumably an expert on Amsterdam's geography, and so Calvin would be making an argument from authority.

But, what if Calvin made assumptions about this person and her intentions? What if the stranger isn't really an authority, or isn't really in a position to know where the train station is? Below are three critical questions that can be asked about any argument from authority:

1. Is "Person A" in a position to know whether "Proposition A" is true? *In this example: Is the tour guide really in a position to know where the Central Station is? Is she an expert?*
2. Is "Person A" an honest (trustworthy, reliable) source? *In this example: Was the tour guide being honest about the directions?*
3. Did "Person A" actually assert that "Proposition A" is true (or false)? *In this example: Did she definitely say that's where the train station is? Maybe Calvin misheard her?*

If Calvin can't answer these questions satisfactorily, then his argument about the train station's location is weakened.

You and your students live in the real world, of course, and it isn't always possible to have the answers to all of these questions. But the point is that asking critical questions helps students look for

weaknesses in arguments. Asking these questions also *strengthens arguments, however,* by pointing out the need to provide additional information*** and clarify how arguments are being justified.

***Additional information about evidence is called "backing" and you can learn more about it in the "Deepen Your Knowledge About Backing" document.

What This Means for My Students

When evaluating arguments, there are six steps your students can follow:

1. *First: Remember that this is an argument:* someone is trying to persuade me (or I'm trying to persuade someone) that a claim they are making is correct. *But don't assume the argument is strong!*
2. Identify the claim that the argument is based on
3. Identify the evidence used to support the claim, and determine whether it is relevant and supports the claim
4. Identify what backing, if any, supports the evidence**
5. Based on that evidence, identify the argument scheme
6. Ask critical questions to check the assumptions that the argument is based on***

**You can learn more about backing in the "Deepen Your Knowledge About Backing" document.

Critical questions are very closely connected to argument schemes.

Introducing your students to argument schemes *before* introducing them to critical questions will give them a better grounding for thinking about why they ask critical questions when arguing. This is how the skills are introduced in the game. Once students understand the differences between the schemes (based on the type of evidence they are using), they will be in a better position to ask different kinds of questions to evaluate arguments.

Each argument scheme has an associated set of critical questions. Following are examples of critical questions for the four argument schemes in the game:

Critical Questions for Arguments from Authority
• *Is this person actually an expert in the area that he or she is talking about?* • *Is this person being honest?* • *Is the evidence that you're using based on something that the expert actually said?* • *Do other experts agree with this expert?*
Critical Questions for Arguments from Consequences
• *How likely is it that these consequences will occur?* • *Is there evidence that supports the claim that this consequence will occur?* • *Are there other consequences that should be taken into account?*
Critical Questions for Arguments from Observation
• *How certain is the observation?* • *Is the observation consistent with other observations?* • *Are there other ways to interpret the observation?*
Critical Questions for Arguments from Comparison
• *Are the two cases being compared really that similar to each other?* • *Is the claim that you're making really true (or false) in the other case?*

- *Is there another case, similar to the one that you're comparing to now, where the claim is false (or true)?*

MODELING & FORMATIVE ASSESSMENT

You should consider starting this activity with the whole class if you are just beginning to use critical questions. Modeling your thinking processes—using the six steps above as appropriate—will help your students see the connection between the different types of argument schemes and critical questions. Otherwise, use this activity with smaller groups who might need more guidance on how to distinguish among argument schemes. Write or project the argument (without the correct scheme and critical questions) so that students can see it.

If you want to use an advanced option for this activity, consider having students identify "backing" that could counter the critical questions.

Argument
The colony is deciding what its next building project should be. Some people think the colony should build more greenhouses for agriculture; some think they should build more laboratories to enable additional research; and some think they should build more dwellings for people to live in. Here is one argument: For its next building project, the colony should build a group of independent dwellings, like houses, so that people can live on their own. One of the engineers once noticed that people seemed to be happier living on their own. *Argument scheme:* Argument from observation *Possible critical questions:* • It says "seemed to be." Is the engineer sure about this observation? • Have others observed that people are happier living on their own?

Start by modeling how students might identify an argument scheme based on a claim and evidence, before asking critical questions. Below is an example:

Okay, what's this argument about? This says that the colony is "deciding" about the next building project. To me, that sounds like they haven't made a decision yet, so I'm guessing that's what the argument is about. Okay, it looks like they have three choices: greenhouses; labs; or dwellings.

"The colony should build a group of independent dwellings"—that "should" makes me think this is the claim. That's what someone is trying to convince others to do. So, someone is claiming that that the colony should build houses so that people can live on their own. Let me underline that and write the word "claim" next to it.

It also says "one of the engineers once noticed that people seemed to be happier living on their own." This seems connected to the claim, which is about "independent dwellings." This sentence says that people seemed to be happier living on their own. Or at least that's what one engineer "noticed." I think this is the evidence to support the claim. The claim is "build independent dwellings," and the evidence is "an engineer noticed that people were happier living on their own." I'll underline that also, and write "evidence."

Now I want to know what kind of argument this person is making, so let me look at the evidence again. What keywords in here give me some idea? "One of the engineers"—maybe this is an argument from authority? But I also see the word "noticed"—that makes me think it's an argument from observation. "One of the engineers" doesn't really sound like an authority. But "noticed that people seemed to be happier" sounds like it's an

observation to me. So, I think this is evidence from observation, which means this person is making an argument from observation. I've got my argument scheme.

Now, other people are also going to be making arguments, so let me see how strong this one is. I think this is an argument from observation, as I've said. What's the most important thing about an argument from observation? What assumptions do I know it's based on? I know that the observation better be true for this argument to count!

What are some questions to check to see if the observation is true? Let me look back at the evidence. Here it says "seemed to be." That doesn't sound definite. Is the engineer certain about what she noticed? If not, this seems like it might not be a great argument. Also, have other engineers noticed the same thing? If she's the only one, or other engineers didn't notice that people enjoyed living on their own, then this argument doesn't really seem that persuasive to me.

Have students do the same activity with the next two arguments, either in pairs/groups or as a class.

If students are struggling, remind them about the four argument schemes and to think about keywords that give some clues about what type of evidence and argument scheme it is.

Argument
Here is a different argument: The colony should build greenhouses for more food. Dr. Anthony Kane, a plant scientist who studies plant growth on Mars, recently gave an interview where he said that the current greenhouses aren't big enough to produce food for the growing colony. *Argument scheme:* Argument from authority *Possible critical questions:* • Is Dr. Kane really an expert in this area? • Was Dr. Kane telling the truth during the interview? Could he have any reason to lie? • What do other experts in this area say?

Argument
Here is a third argument for building: The colony must build more laboratories now. If we do not build labs, then our ability to look for new sources of energy on Mars will be delayed by decades. *Argument scheme:* Argument from consequences *Possible critical questions:* • How likely is it that the colony will be "set back by decades"? • What evidence is there to support the claim that the colony will be set back by decades? • Are there other possibilities for what might happen to the colony if we don't build labs?