

Critique and co-construction, Oral Argumentation

Goal: In this lesson, students learn to formulate their own arguments, critique opposing arguments, and co-construct new arguments based on the contributions of others.

Teaching strategy: Discourse Circle

Works best with: Small groups

Preparation:

- Cut up fact cards and claim strips. It is helpful to put these in baggies for students.
- Write opening question on the board, *Have you ever had someone tell you that you were wrong about something in front of other people? How did this feel?*
- Write up sentence starters for agreeing and disagreeing (see below) on chart paper. These will be useful to keep for future lessons and discussions.
- Write the discourse circle procedure on chart paper.

Teaching:

- Ask students, *Have you ever had someone tell you that you were wrong about something in front of other people? How did this feel?* (This can be done as a turn and talk, stop-and-jot, or whole class discussion)
- Explain to students that just like regular people, scientists spend time discussing important issues, and they often disagree.
 - Focus on listening. Remind students that they already know how important it is to really *listen* when other people are sharing their thoughts, even if we don't agree with them. This is actually hard work, but it will be an expectation in this class. Explain that today they will practice listening in this way.
 - Focus on co-constructing, or 'adding on' and critiquing. Explain that they will also practice another set of skills -- adding on to other people's thinking in appropriate ways when they do agree with them, and critiquing respectfully when they disagree with their thoughts.
- Introduce the topic: Imagine we have a school pond. It is a beautiful ecosystem with trees, grasses, aquatic plants, frogs, fish, birds, and many insects. Many science classes have visited the pond, and the art class has even gone there to sketch the wildlife. Unfortunately, there is a mosquito problem in the pond. Young mosquitoes, called larvae, live in nearby lakes and ponds, and are now found in our school pond. Along with the larvae, of course, come adult mosquitoes. In fact, teachers have stopped taking classes there because students are complaining of mosquito bites. Parents are afraid these mosquitoes might carry dangerous diseases. One teacher has suggested using an organism called a mosquitofish to address this problem. These fish eat mosquitos.

Another teacher suggested that visitors simply use bug spray when they come to observe the pond.

- **Prepare for the discourse circle.** Before the discourse circle, students must do some prep work. In total, this work should take about 12 minutes. Project the Fact Cards. Note: in previous activities, we have called these evidence cards. However, some of the cards here are actually evidence *against* one of the claims (and thus support for the other). Therefore, it is important that your students understand that this sort is a little different than the ones they've done before.
- Tell students that they will receive some facts about mosquito fish and about bug spray. Some will support one of the solutions, and some will support the other. Some, however, will show a negative side to a competing claim. This is one type of critique.
- Give the students an example: For example, let's say we're trying to decide whether to have pizza or salad for our class lunch. So, our two claim strips are: "We should have pizza" and "we should have salad." The fact that 9/10 students love pizza would go where? What about the fact that salad is rich in vitamin C? Now, here's a tough one, what about the fact that salad is more expensive than pizza and our class is trying to save money? This is a critique of the claim about salad, so it would go with the claim for pizza. Does that make sense?
- Put students into partnerships and distribute the claim strips and fact cards.
- Explain that students will place their claim strips at the top of their work space. They will then sort the fact cards according to which claim each fact supports, placing all of the fact cards under the appropriate claim. Be sure to tell your students that before they place a fact under a claim strip, they must discuss and agree on where it should go. (You may need to demonstrate this if you have not done many evidence sorts with students before.) Give students 8 minutes to sort and discuss.
- After all pairs have sorted, ask students to decide whether they think mosquitofish should be used in our school pond to control the mosquito population or students should just use bug spray. Ask students to answer this question individually on a sheet of paper. Their answer should include claim, evidence, and reasoning. For students unfamiliar with formulating arguments, see the intra lesson.
- Introduce sentence starters for agreeing and disagreeing and emphasize to students that they do not have to use these, but that they are a great resource if they are feeling stuck. Note: these sentence starters are helpful for less confident participants. Additionally, if the discourse circle seems to turn rude or combative, it's helpful to ask students to return to these sentence starters. Some students might benefit from a demonstration of how to use them, which can be combined with a demonstration of the discourse circle procedure.

Sentence starters for agreeing (post on chart paper)

-To add onto what ___ said, ...

-Based on what you said, I think we could also say that...

-I agree with ... because ...

- Another piece of evidence that supports this claim is...
- What __ says makes sense because...

Sentence starters for disagreeing (post on chart paper)

- I disagree with you because...
- I think its actually something different...
- I don't think something you said makes sense. You said...
- One problem with your idea is...

- **Introduce Discourse Circles.** Tell the class that they'll be using a routine called Discourse Circles to share their ideas about how to deal with the mosquito problem based on the facts they just read. During this activity, they'll get a chance to talk and listen in small groups. In particular, this Discourse Circle will be a chance to practice respectfully disagreeing and agreeing with others in our group.
- **Explain the directions.** Draw students attention to the chart paper with this procedure. Explain the procedure for Discourse Circles, as follows:
 1. One person presents her position and her evidence.
 2. Other students who agree add their evidence
 3. Then a student who disagrees says why and presents his evidence.
 4. The group discusses the statements and evidence to see if they can come to agreement.
- **Model, if needed.** You can model with any topic (you might describe your favorite movie, book, what you did this weekend, etc). Choose three students to come to the front of the room and be your group. Go through the steps, being sure to use sentence starters.
- **Divide students into groups of four.**
- **Pose the discussion question.** Ask, "Should we release mosquitofish into our school pond or should we use bug spray instead?"
- Tell students that while they are discussing this question you are going to walk around and listen. Remind them that you will be listening for people disagreeing and agreeing in the respectful ways we've talked about today. Also, emphasize that you will be looking for evidence of listening, which might be nodding, making eye contact, or taking notes.
- Be sure to post the instructions somewhere visible, so that students can refer to them if they don't know what to do. If you anticipate your students needing more structure, you can use a timer and walk them through each step. It's also helpful to circulate through the room during this time, listening for particularly great contributions.
- Complete the Discourse Circle procedure:
 1. One person presents her position and her evidence.
 2. Other students who agree add their evidence
 3. Then a student who disagrees says why and presents his evidence.
 4. The group discusses the statements and evidence to see if they can come to agreement.

*Students might ask: What if we all agree? If this is the case, ask one student to play the “devil’s advocate.” You might mention the origin of this phrase—it came from the Roman Catholic Church’s process of canonizing someone: before the person was officially canonized, they had someone act as the ‘Devil’s advocate’; this person’s job was to explain why they shouldn’t be canonized. Explain the importance of disagreement in testing ideas.

- **Debrief:** Highlight effective or interesting agreements and disagreements you heard. Focus on sharing the successes of groups who respectfully handled these. In addition, emphasize critiques that were particularly well thought out, emphasizing that good critiques get everyone in the circle thinking.

Why this matters: Discourse Circles engage students in structured, evidence-based discussions. They are an opportunity for students to practice justifying claims, as well as critique and build on the claims of others. Without critique and co-construction, students cannot engage in a truly collaborative discussion. Critique and co-construction are the elements of a discussion that invite students to do real critical thinking work, and are absolutely essential to the work real scientists do.

Resources:

- Fact cards and claim strips

Continued Teaching and Support:

If you have some students who seem to understand how to communicate in more sophisticated ways and others who do not, it is helpful to do a *fishbowl discourse circle*. Have four students do a discourse circle in the center of the room, with the rest of the class surrounding them. Then, ask students to share what they saw that went well, which sentence starters they used, etc. Also, the discourse circle is a routine that can, and indeed should, be repeated. As students practice with this routine and you give them feedback, they are sure to improve. Both scientific and non-scientific topics can be covered. However, it shouldn’t be assumed that the capacity to engage in this sort of discussion with everyday questions will translate to scientific discussions. Kids need practice dealing with scientific arguments in particular.