Level 0: Student does not identify relevant supporting evidence

Teaching Strategy 1: Shared Argument Reading: Focus on Evidence

Goal: The structure and purpose of an argument will be presented (or reviewed) in order to support students in being able to identify relevant evidence.
Works Best With: Whole Class

Details

Introduction:

- Review (or introduce) the basic structure of a scientific argument, using the Introductory Argument, below. Post this argument on the wall so students can refer to it in this and later lessons.
- As a next step, find or create other short, simple arguments to read with students (see example in Resources; you can use these for the first lesson but will need to find others to work with in the future).
- As you read the simple argument (aloud or independently), stop to ask students to first help you to identify the claim and restate it in their own words. Refer to the posted argument as needed to help students remember what a claim is.
- Explain to students that the ideas in the rest of an argument should serve to support this claim.
- Read 1-2 sentences of the example argument, stopping to discuss what evidence is revealed with each new sentence and asking students to explain, in their own words, how or why the evidence supports the claim.

Lessons to Follow:

- Create several mini-lessons using simple arguments and provide these for students over the course of several days or weeks. A mini-lesson is brief, targeted instruction designed to focus on a specific skill or concept; in this case you might ask students to find and describe various parts of an argument or critique a poor argument and add in necessary components. These lessons should only take 10-15 minutes and may be followed up by practice either immediately following the lesson or for homework. The presentation of each mini-lesson should be as interactive as possible, so students can begin to take on this thinking themselves, over time.
- An additional support for this work would be to provide a graphic organizer that students complete as they think about each new argument, such as the one linked below.

Resources

- **Sample Introductory Argument: Tree Frogs**
- **Sample Argument: Mountain Formation**
- **Graphic Organizer**

Why This Matters:

An understanding of what constitutes evidence in an argument is based on knowing the purpose of an argument as well as how the components of an argument relate to each other. In its simplest form, an argument offers a claim or idea that is supported by evidence and reasoning. (Note, however, that this series of lessons focuses only on evidence) In science, the claim is a statement about the natural world, and the evidence that supports the claim should be highly relevant to that claim. Students who do not understand that the claim and evidence should be related and should support each other will have a difficult time moving to a deeper and more nuanced understanding of evidence and how it is used in a scientific argument.

Teaching Strategy 2: Card Sort

Goal: Offers students practice with identifying relevant and irrelevant supporting evidence in order to better understand the component parts and structure of an argument
Works Best With: Small groups or individuals

Details:

Preparation:

- Create a claim that can be supported with evidence.
- Create several pieces of evidence that support the claim, and write each piece of evidence on a card. Also include a few pieces of irrelevant evidence that do not support the claim. Makes sure that some of the evidence includes data.
- Print or write the claim and each piece of evidence on separate cards or small pieces of paper (See example). Make copies so that each pair or group of students has a set.

Teaching:

- Explain that students should sort the evidence into two categories: evidence that supports the claim (relevant evidence/supporting) and evidence that does not support the claim (irrelevant/non-supporting evidence). They should do this by placing relevant evidence with the claim and placing the irrelevant evidence off to the side.
- Emphasize that students should only move evidence into the category of relevant or irrelevant after they have discussed *why* they are making this

distinction with their partner. Both partners should agree on where the evidence goes, or should be able to explain why they do not agree.
- After students have sorted and discussed the evidence, spend time debriefing their discussions. Emphasize the thinking and reasoning students did as they made their choices, rather than whether each choice was right or wrong.
- Explain that this is the kind of thinking you want them to do when reading or writing their own arguments in this class.

Resources:
- **Card Sort Template**
- **Card Sort Example**

Why This Matters:
For students to develop an understanding of what constitutes evidence in an argument beyond simple identification or definitions requires that they have practice considering what makes evidence supportive of a claim. Providing students with several pieces of non-supportive evidence allows them to think more carefully about what it means for evidence to support a claim. This ensures that this activity is active, and that students are not simply identifying supporting evidence but justifying their choices of supporting evidence. A card sort such as the one described above allows students to actively consider how evidence is related to a claim (or not) and discuss this with peers. This activity also provides a component of peer support, which can help students to consider ideas that they may not have had the opportunity to hear about had they worked independently without the scaffold of partner work.