Responsive Mini-Lessons: Relevance—Somewhat Descriptive

About Responsive Mini-Lessons

Responsive Mini-Lessons (RMLs) provide short, targeted lessons that are responsive to each class's facility with oral argumentation, as assessed with the DiALoG Tool. The DiALoG Tool has eight components. Four are intrapersonal—claims, evidence, reasoning, and relevance; four are interpersonal—listening, co-constructing, critiquing, and regulation. RMLs are aimed at providing more practice with one of the eight components of the DiALoG Tool, so your students are more able to work together to enact rich, thoughtful, and engaging oral argumentation. For each component, the following phrases can be assigned, via the DiALoG Tool, to describe your students' abilities: Not Descriptive, Somewhat Descriptive, or Very Descriptive. An assigned phrase of Not Descriptive or Somewhat Descriptive indicates that your students likely need more support with that particular component of oral argumentation; a lesson is then suggested to help your students strengthen their abilities in that area. If the Not Descriptive phrase is assigned, the lesson provides basic, introductory support; if the Somewhat Descriptive phrase is assigned, the lesson assumes some basic facility with that component and provides an opportunity to practice it with more focus.

For the Relevance RMLs, the Not Descriptive lesson provides an introduction to what relevance is as it relates to a particular claim or topic. Claims and possible supporting evidence are provided to students, and students consider which possible ideas are relevant to the offered claim. The Somewhat Descriptive lesson builds on this by having students consider more complex examples of possible evidence and work together, through discussion, to determine if those examples are relevant or irrelevant.

Does a Responsive Mini-Lesson for the Somewhat Descriptive Level Make Sense for Your Class?

The suggestion to provide a Responsive Mini-Lesson for the Somewhat Descriptive level indicates that, based on your use of the DiALoG Tool, the following statement best describes your students' use of relevant evidence during oral argumentation: *Students' contributions are sometimes relevant to the scientific question that is the focus of the argumentation activity.* For more detail about this level and how it compares to other levels, please see the DiALoG Tool User Guide.

There is one Responsive Mini-Lesson provided for the Somewhat Descriptive level.

Goal

- Provide students with practice evaluating arguments in order to determine whether each argument is mostly relevant or mostly irrelevant to the question under consideration.

Responsive Mini-Lesson

Materials and Teaching Considerations

For the class
- Projection: Question: Were Some Dinosaurs Huge?
- Projection: Definitions of *Relevant* and *Irrelevant*
- Projection: Pacu Fish Problem: Introduction
- Projection: Pacu Fish Problem: Introduction (continued)
- Copymaster: Pacu Arguments (4 pages)
- stapler*

*teacher provided

For each pair of students
1 set of Pacu Arguments student sheets (4 pages)

Time frame: 30 minutes

Teaching Considerations
Most lessons will begin with an introduction followed by the lesson itself. The introduction is a brief activity that sets up and supports the lesson that follows. Each introduction is teacher-led, while the lesson that follows is more student-centered.

Getting Ready

1. **Decide how to present the resources for this lesson.** During the introduction and lesson, you will present Question: Were Some Dinosaurs Huge?, Definitions for *Relevant* and *Irrelevant*, Pacu Fish Problem: Introduction, and Pacu Fish Problem: Introduction (continued).

   - Alternatively, you can choose to make enough copies of all projections so each pair of students receives one copy of each.

2. **Make copies of the Pacu Arguments copymaster.** Make enough copies so each student gets one set. There are four pages; staple each set together.

3. **Consider finding and projecting images of pacu fish.** When you introduce the Pacu Fish Problem, you may want to show images of pacu fish to make the problem more concrete. There are many images of pacu on the Internet. This problem is based on actual problems that are occurring with pacu in South American rivers. If you want to provide a visual that best supports this real-life problem, you may want to choose an image of the smaller, reddish-colored pacu that can be found in these rivers.

Introduction

1. **Project Question: Were Some Dinosaurs Huge?** Have a volunteer read the argument aloud.

2. **Pairs discuss possible supporting statements.** Ask students to think about whether each sentence in this argument helps make the argument convincing. Have pairs discuss each statement and be prepared to explain why that statement does or does not make the argument convincing.

3. **Discuss the arguments as a class.** Have students share their ideas about the supporting sentences in the argument. Support students in pointing out that the last sentence (*Some dinosaurs ate animals, and some dinosaurs ate plants*.) IS about dinosaurs but is NOT connected to either the question (*Were some dinosaurs huge?*) or the claim (*Many of the dinosaurs that lived on Earth were huge*.). Say, **"Even though**

this last sentence is about dinosaurs, it really isn't helpful to this argument. It doesn't help to make it convincing. In fact, without more information, it might even be confusing to some people who read it."

4. **Project Definitions of *Relevant* and *Irrelevant*.** Read the definitions aloud and explain that these terms are useful in argumentation. Remind students that an important goal of argumentation is to be convincing to others who hear or read your argument. When there is unnecessary, unrelated information in the argument, it makes it less convincing. Say, **"In argumentation, relevant information is information, such as evidence, that is closely connected to the claim. Providing relevant information can help you make your arguments more clear and convincing to others. Irrelevant information is information that is not closely connected to the claim or question that is being explored and, because of this, doesn't help others better understand the argument being made."**

5. **Make an explicit connection to oral argumentation in the classroom.** Remind students that when they participate in oral argumentation in the science classroom, they are working toward presenting ideas and thinking to their peers in a more thorough and convincing way. This means that when they are discussing ideas and evidence with others, they want to try to make sure that the ideas they add to the conversation are relevant to that conversation.

6. **Discuss relevant and irrelevant ideas that are more than simple statements.** Explain that sometimes, especially during oral argumentation, people offer irrelevant ideas that are more than just a single statement. Sometimes, people provide entire mini-arguments that are either unrelated or very loosely related to the topic that is under discussion. It is helpful if the group can recognize these instances so they can help one another get back on track, discussing information that is relevant to the topic of discussion. Say, **"Sometimes it can be difficult to recognize irrelevant arguments when they come up because they often use terms related to the topic. However, if you listen carefully, you can see that the ideas are straying away from the original question and claims under discussion. In the upcoming activity, you will read a set of arguments and evaluate, first on your own and then as a class, which arguments are more relevant and which are less irrelevant to the topic under consideration. In this case, the topic is about a disappearing fish called the pacu."**

Lesson

1. **Project Pacu Fish Problem: Introduction.** Explain that a class of middle school students has been asked to help with a study of a local river and that this projection and the next will explain about their project. Read the text aloud and ask students if they have any questions or comments or if they need clarification about terms or any of the content.

2. **Project Pacu Fish Problem: Introduction (continued).** Read the text aloud and, again, ask if students have any questions or comments or if they need anything clarified.

3. **Explain the activity.** Hold up a set of the Pacu Arguments student sheets and let students know that they will work independently for this activity.

Responsive Mini-Lesson

- Explain that each student will read the four possible arguments and decide if each one is mostly relevant or mostly irrelevant to the question *Why are pacu fish disappearing from the river?*

- For each possible argument, students will also need to explain which aspects of the argument are relevant and which are irrelevant to the question.

- Remind students that arguments can be tricky because they may seem relevant, but if you listen or read them more closely, you can determine which statements in the arguments are more relevant and, therefore, more helpful and convincing.

- Let students know that you will project the definitions of *relevant* and *irrelevant* so students can have access to them as they work.

4. **Project Definitions of *Relevant* and *Irrelevant*.**

5. **Students evaluate arguments independently.**

6. **Have pairs discuss their thinking about the arguments.** Once students have had an opportunity to evaluate all four arguments independently, ask them to discuss their thinking with a partner. Highlight the importance of sharing their reasoning about which aspects of the arguments are relevant and which aspects are irrelevant. Let students know that it is more important to explain how they think the claim or ideas may or may not connect to the pacu fish question rather than focusing on getting the right or wrong answers.

7. **Discuss a few arguments as a class.** If you do not have time to discuss all the arguments as a class, you might choose to focus on two arguments that seemed to prompt the most discussion as you were listening to pairs discuss. After discussing with the class, ask students which arguments they would recommend that the middle school students in the pacu example use as they assist the scientists. (It will likely be Argument 2 and Argument 3 because these contain the most relevant information.)

Why This Mini-Lesson Matters

This mini-lesson focuses on exploring the concept of relevancy as an important aspect of making convincing arguments. It provides students with opportunities to practice identifying both relevant and irrelevant information within several arguments in order to determine which arguments are stronger/ more convincing. Relevancy is integral to making convincing arguments (Schwarz, Neuman, Gil, Ilya 2003; Sampson and Clark 2008), and students need opportunities to learn what relevancy is and isn't with regard to argumentation. Students also need opportunities to learn how the addition of relevant information can strengthen an argument and how the inclusion of irrelevant information can weaken an argument.

Resources

Sampson, V. and Clark, D. (2008). Assessment of the ways students generate arguments in science education: Current perspectives and recommendations for future directions. *Science Education* 92(3): 447–472.

Schwarz, B. B., Neuman, Y., Gil, J., and Ilya, M. (2003). Construction of collective and individual knowledge in argumentative activity. *Journal of the Learning Sciences* 12(2): 219–256.

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Question: Were Some Dinosaurs Huge?

Many of the dinosaurs that lived on Earth were huge. Some dinosaur leg bones that have been dug up are as long as a school bus. One dinosaur whose bones were found in Argentina is estimated to weigh 70 tons, which is 63,503 kilograms (140,000 pounds)! One *Triceratops* skull, considered to be the largest complete skull ever found, is 2.8 meters (9.2 feet) long and 5.2 meters (2.8 feet) tall. Some dinosaurs ate animals, and some dinosaurs ate plants.

relevant: closely connected to the topic or claim

irrelevant: not closely connected to the topic or claim

Pacu Fish Problem: Introduction

A fish called pacu has been disappearing from local rivers. A group of students are working with scientists to collect data about the rivers so they can help the scientists figure out an answer to the question *Why are pacu fish disappearing from the river?*

Pacu Fish Problem: Introduction (continued)

To prepare to help the scientists, the students' teacher has asked them to read some information about the problem, including some arguments that have already been made about the pacu fish. The teacher wants students to decide which arguments are relevant and which are irrelevant to the question about the pacu fish. Focusing only on relevant arguments will help students better understand why the fish may be disappearing, so they can decide what kind of data to collect when they begin to help the scientists.

Name: _____ Date: _____

Pacu Arguments

1. Read each of the four possible arguments.
2. Answer the questions after each argument.

Argument 1

Pacu fish are disappearing because fish often just disappear. Fishing used to happen in a lake near my house, and the people who fished there noticed that there used to be many fish called bass in the lake. In fact, once there were over 3,000 bass in that lake. Then, a few years later, scientists found that there were less than 200 bass in the same lake. Pacu fish are also disappearing.

Is this argument **mostly relevant** or **mostly irrelevant** to the question *Why are pacu fish disappearing from the river?*

Circle one: mostly relevant   mostly irrelevant

In what ways is this argument relevant?

_____

_____

_____

_____

In what ways is this argument irrelevant?

_____

_____

_____

_____

Name: _____ Date: _____

Pacu Arguments (continued)

Argument 2

Pacu fish are disappearing because the food they eat is disappearing. Pacu fish are a rare kind of fish that eat mostly fruit. The fruit they eat comes from several fruit trees that grow next to the rivers and drop fruit into the rivers. These fruit trees are dying because there has been a long drought in this area, and there is less water. Since there is less water, the trees are either dying or are making less fruit. Since the pacu mostly eat the fruit from the trees that are dying, these fish do not have as much to each, so they are dying, too. This is why the pacu are disappearing from the rivers.

Is this argument **mostly relevant** or **mostly irrelevant** to the question *Why are pacu fish disappearing from the river?*

Circle one: mostly relevant   mostly irrelevant

In what ways is this argument relevant?

_____

_____

_____

_____

In what ways is this argument irrelevant?

_____

_____

_____

_____

Name: _____ Date: _____

Pacu Arguments (continued)

Argument 3

Pacu fish are disappearing because predators are eating them. Pacu have several main predators. One is a small animal, which is related to alligators, called the caiman. The caiman population has increased in the rivers, and they are eating pacu. Another predator that eats pacu is a bird called the urubu. This bird is found all around the rivers, and one of the main things urubu eat is pacu. There are other predators that can eat fish. Pacu are disappearing in the rivers because they are being eaten every day by several predators.

Is this argument **mostly relevant** or **mostly irrelevant** to the question *Why are pacu fish disappearing from the river?*

Circle one: mostly relevant   mostly irrelevant

In what ways is this argument relevant?

_____

_____

_____

_____

In what ways is this argument irrelevant?

_____

_____

_____

_____

Name: _____ Date: _____

Pacu Arguments (continued)

Argument 4

Pacu fish are a strange kind of fish. When fish eat fruit, it isn't normal. Most fish don't eat fruit. This can be a problem for the fish. Fish usually eat either small plants in the river or small animals in the river. Some fish eat both small plants and small animals that are smaller than they are. Eating something that isn't what other fish eat is strange.

Is this argument **mostly relevant** or **mostly irrelevant** to the question *Why are pacu fish disappearing from the river?*

Circle one: mostly relevant   mostly irrelevant

In what ways is this argument relevant?

_____

_____

_____

_____

In what ways is this argument irrelevant?

_____

_____

_____

_____