

Introductory Module on Scientific Argumentation



What is the role of reasoning in a scientific argument?

Agenda

What is the role of reasoning in a scientific argument?

- Extension – Discussion about *Try it with your students!*
1. Video & Discussion: Using the reasoning tool
 2. Activity #1: Writing with the reasoning tool
 3. Activity #2: Analyzing student writing
 4. Session Takeaways
- Extension – *Try it with your students!*

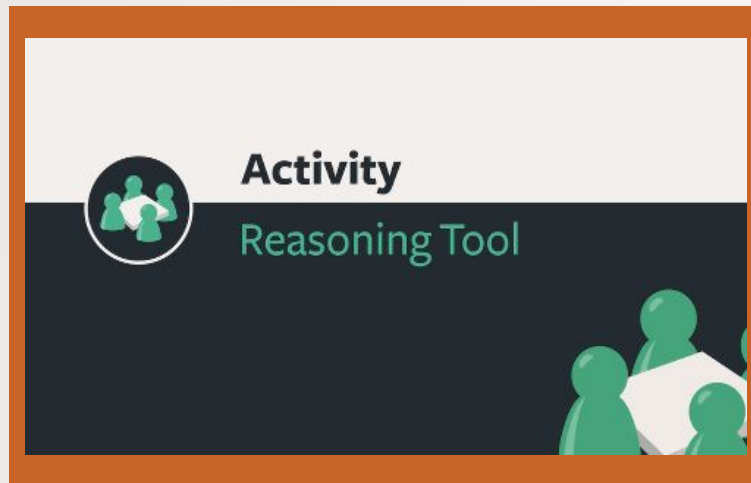
Extension Discussion: *Try it with your students!*

Share the lesson you developed to focus on competing claims, as well as any student artifacts you may have

Discussion Questions:

1. What went well with the lesson? Why do you think it went well?
2. What was challenging with the lesson? Why do you think it was challenging?

1. Video & Discussion: Using the reasoning tool



Watch the video below, which provides an introduction to the reasoning tool


Discussion Questions:

- What challenges have you experienced, or could you imagine experiencing, supporting your students in articulating their reasoning?
- What different ways could you envision using the reasoning tool to encourage students to explain the link between their evidence and claim?


2. Activity: Writing with the reasoning tool

The task:

- Use the reasoning tool to explain how these pieces of evidence support the claim that the fossil tooth came from a prehistoric shark
- Once you have completed the task, share your work with another person and give each other feedback

Evidence	This evidence matters because...	Therefore...
The fossil tooth is sharp.		The fossil tooth came from a prehistoric shark, which is related to sharks that live today.
The fossil tooth was found in sandstone, which is a type of sedimentary rock.		 <small>By wikipedia/Tribal</small>

Sample completed reasoning tool

Evidence	This evidence matters because...	Therefore...
The fossil tooth is sharp.	<i>Because this fossil tooth is sharp it must have come from a carnivore. Current day sharks are carnivores, which means they eat meat from smaller animals, such as fish. Sharp teeth help tear through meat, which is easily digestible.</i>	<p>The fossil tooth came from a prehistoric shark, which is related to sharks that live today.</p>  <p><small>in wikipedia/Trisal</small></p>
The fossil tooth was found in sandstone, which is a type of sedimentary rock.	<i>Sedimentary rock is usually found near bodies of water, such as oceans, which is where sharks live.</i>	

Discussion about the reasoning tool

- What was your experience in using the Reasoning Tool? What did you find helpful? What did you find challenging?
- How can you envision your students engaging in this activity? What would work well? What challenges would they have?

3. Activity: Analyzing Student Writing

The task:

- Read through the students' writing and underline the reasoning in each argument
- Rank the sample student writing from strongest (1) to weakest (4)
- Once you have completed the task, share and discuss your ranking with another person

Discussion about Writing Analysis

- How did people rank the student writing? Why?
- What were some of the strengths and weaknesses of the student work?
- How might the reasoning tool help students with this task?

4. Session Takeaways

Reasoning explains how evidence supports a claim, often incorporating science ideas and concepts

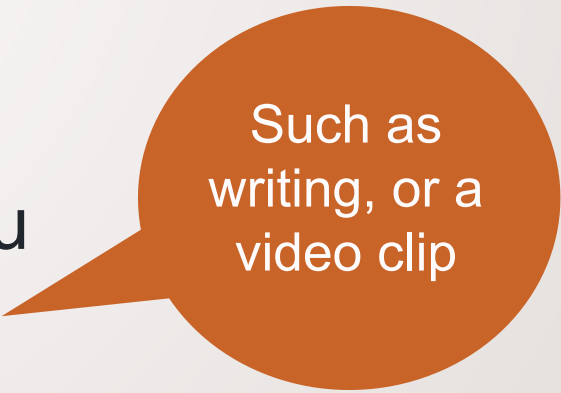
Encouraging students to write and talk about reasoning supports them in building understandings of the science concept

Including reasoning makes an argument more convincing

Extension: *Try it with your students!*

Develop or revise a lesson to encourage students to write about reasoning. This lesson could incorporate the reasoning tool or it could be another type of activity, such as encouraging students to explain *why* they sort cards as they do during an evidence card sort.

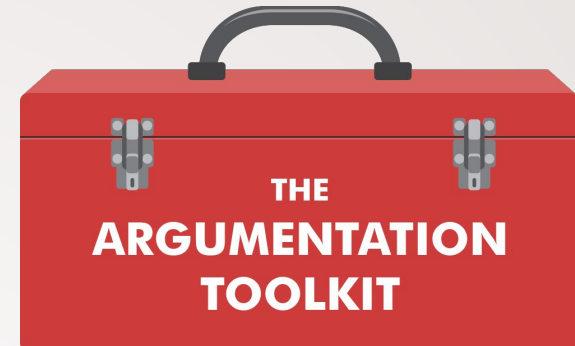
For the next meeting, bring the lesson you developed, as well as potentially **student artifacts** of students engaged in this



Such as writing, or a video clip



The Learning
Design Group



PARTNERS AND RECOGNITION



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