**Engaging in Argument from Evidence**

*Time: 45 minutes*

**Goals:**

* Engage in scientific argumentation.
* Define argumentation and understand how it differs from other science practices.
* \*Design a scaffold or tool to use for argumentation in your classroom.

*\*If the extension activity is completed*

**Materials:**

* Pluto Evidence Card Sort & T-Chart (cut cards in advance)
  + Each group will need one set of these materials
* Materials for creating classroom tools (e.g. chart paper, markers, glitter, glue)

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| **Activity** | **Description** | **Time** |
| Opening Argument: Is Pluto a Planet? | * Present data and two competing claims * In pairs or small groups, have teachers sort the evidence cards by the claim they support. * Allow time for discussion:   + Given the evidence, do you think Pluto is a planet or a dwarf planet? * After completing the activity, discuss the conclusion questions with the group:   + Did you have trouble picking which claim a card supported?   + How might you support students who are experiencing challenges with this task?   + Why is argumentation an important skill for scientists and students? | 15 min |
| Defining “Engaging in Argument from Evidence”  What is it? What is it NOT? | * Share and read text from the recently revised MA standards, which defines this science practice * Focus on the similarities and differences between “Engaging in argument from evidence” and “Constructing Explanations” * Key points to highlight during the discussion:   + Arguments feature competing claims   + Argumentation includes the process of selecting the best claim | 5 min |
| Argumentation Toolkit Video | * Watch the Argumentation Toolkit Overview video:   + http://www.argumentationtoolkit.org/intro.html * Discuss the two images from this website, one which focuses on the elements that make up argumentation (i.e. evidence, reasoning, interactive, and competing claims), and the other which highlights the structural parts of an argument (i.e. claim, evidence, and reasoning) | 5 min |
| BPS Video Examples & Debrief | * Ask teachers to focus on the lists of student actions as they watch the videos. These actions include:   + Are students pointing out evidence by referring to data?   + Are students building on or disagreeing with each other’s ideas?   + Are students using scaffolding to form their arguments?   + Are students engaging in *arguing from evidence* without “arguing”? * Middle school example:   + Watch the video of a class engaged in argumentation in which students are debating giraffe evolution using two competing ideas   + Highlight to teachers that this is NOT an exemplar * Kindergarten Example:   + Students have been learning about the meaning of the words “Technology” and “Engineering”. In this example, students are debating if a table and a chair can be considered technology.   + Students were previously told that a technology is something designed to solve a problem or make lives easier. * After watching the videos, debrief with the group:   + Ask teachers what they noticed in these videos.   + Refer back to the earlier questions. | 20 min |
| Extension – Creating & Sharing Classroom Tools | * Work Time:   + Provide teachers with time to get some work done that will actually be useful! Encourage teachers to use their creativity and knowledge to create a tool that will help promote engaging in argument in the classroom. Examples could be an anchor chart, a slideshow for students (i.e. PowerPoint), or a graphic organizer.   + Teachers can work independently or in groups depending on individual needs. * Share Out:   + Give each group or individual a few minutes to share the tool they created for the classroom, and to receive feedback. |  |
| Additional Resources | * Share some ways that teachers can learn more information about “engaging in argument from evidence”   + The Argumentation Toolkit –<http://www.argumentationtoolkit.org/>   + NGSS@NSTA Science Practices Progression (pg. 7) |  |