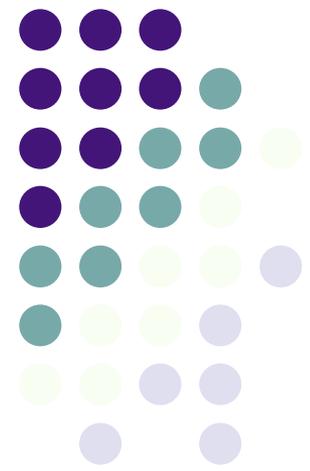




Engaging in Argument from Evidence





Agenda

1. Opening Argument- Is Pluto a planet?
2. Defining “Engaging in Argument from Evidence” What is is? What is it NOT?
3. Argumentation Toolkit Video
4. BPS Video Examples & Debrief
 - **Extension Activity – Creating & Sharing Classroom Tools*

Is Pluto a planet or dwarf Planet?



- In pairs or small groups:
 - Read each “evidence card” and place it under the claim you think it best supports.

Is Pluto a Planet or a Dwarf Planet?



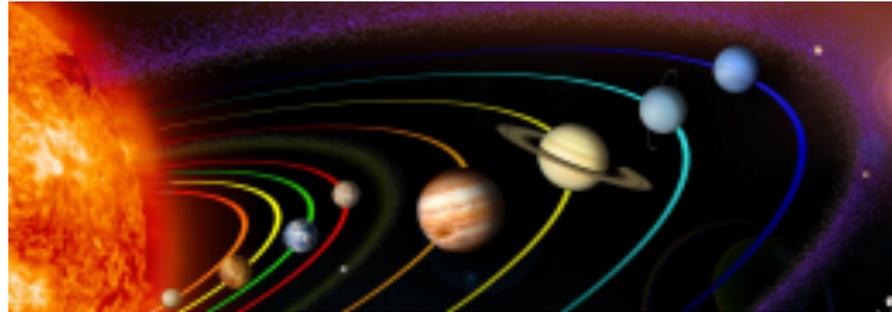
<https://en.wikipedia.org/wiki/File:PIA19873-Pluto-NewHorizons-FlyingPastImage-20150714.jpg>

Planet	Dwarf Planet

Is Pluto a planet or dwarf Planet?



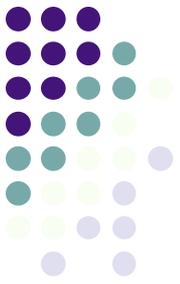
- Discussion:
 - Given the evidence, do you think Pluto is a planet or a dwarf planet?



<https://www.flickr.com/photos/11304375@N07/2818891443>

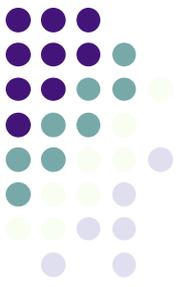
- This activity is targeting the following standard:
 - Explain the role of gravity in ocean tides, the orbital motions of planets, their moons, and asteroids in the solar system. [8.MS-ESS1-2]

Is Pluto a planet or dwarf Planet?



- Discussion Questions:
 - 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?

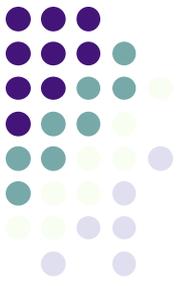
Defining “Engaging in Argument from Evidence”



- From the recently revised MA standards:

*Argumentation is a process for reaching agreements about explanations and design solutions. In science, reasoning and argument based on evidence are essential in identifying the best explanation for a natural phenomenon... Student engagement in scientific argumentation is critical if students are to understand the culture in which scientists live, and how to apply science and engineering for the benefit of society. As such, **argument is a process based on evidence and reasoning that leads to explanations acceptable by the scientific community and design solutions acceptable by the engineering community.***

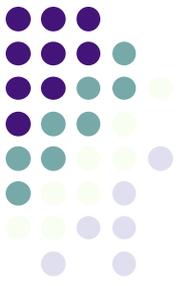
Defining “Engaging in Argument from Evidence”



- From the recently revised MA standards:

*Argument in science goes beyond reaching agreements in explanations and design solutions. Whether investigating a phenomenon, testing a design, or constructing a model to provide a mechanism for an explanation, students are expected to use argumentation to **listen to, compare, and evaluate competing ideas** and methods based on their merits. Scientists and engineers engage in argumentation when investigating a phenomenon, testing a design solution, resolving questions about measurements, building data models, and using evidence to evaluate claims.*

How is argumentation similar to and/or different from explanation?



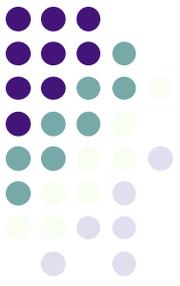
Engaging in argument from evidence

- Listen to, compare, and evaluate competing ideas or solutions
- Identify the best explanation or solution
- Is evidence-based

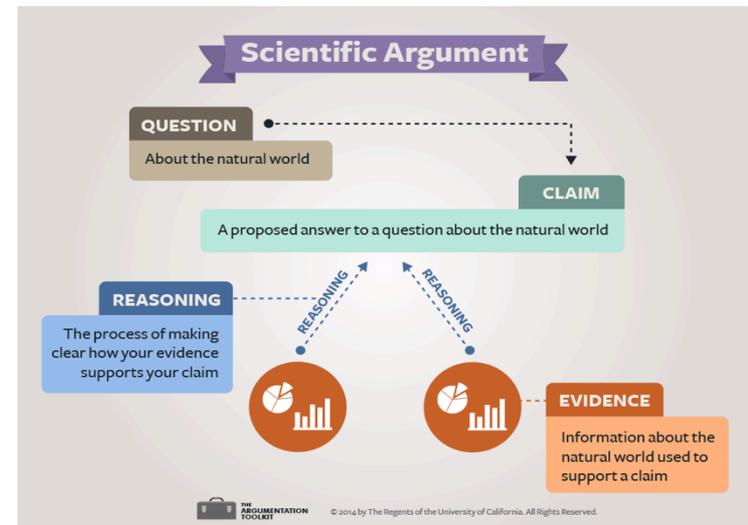
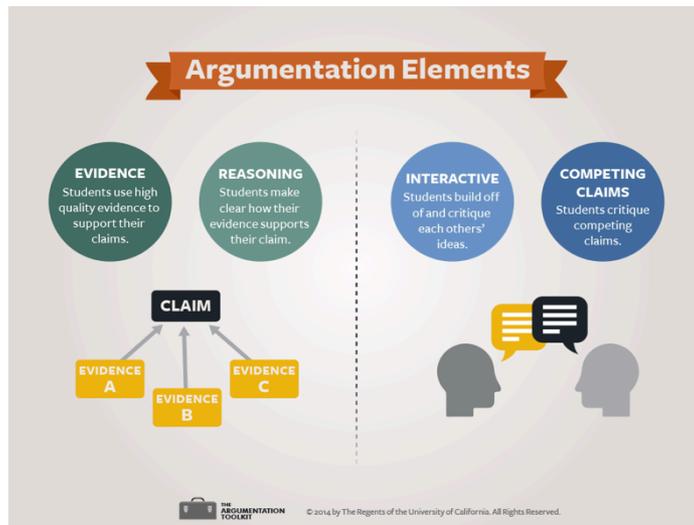
Constructing explanations

- Develop one or more explanations of a phenomenon or solutions to a problem
- Is evidence-based

Argumentation Toolkit Video



- Watch the Argumentation Toolkit Overview video, which provides an introduction to this science practice:
 - <http://www.argumentationtoolkit.org/intro.html>



BPS Video Examples:



- As you watch the following videos, keep in mind these questions:
 - 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”?

BPS Middle School Example



- Watch the video below
- Students in this class were debating the following explanations:
 - Josie says that giraffes evolved their long necks by stretching them over their lifetime and passing on longer necks to their offspring.
 - Jessie says that giraffes have different length necks, but those with shorter necks died before they could pass them on.
- Students were provided with the following scaffolds:

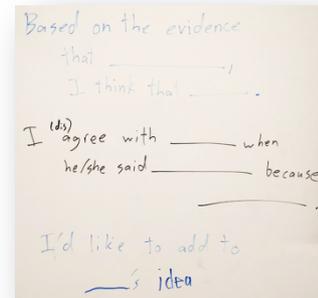


Do you agree or disagree? How would you explain how giraffes got their long necks?
How did giraffes evolve such long necks?

Claim: _____

Evidence	Reasoning

Graphic Organizer



Based on the evidence
that _____,
I think that _____.

I ^(dis)agree with _____ when
he/she said _____ because
_____.

I'd like to add to
_____s idea

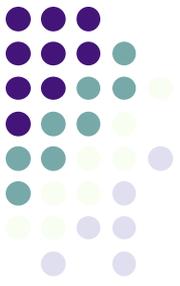
Sentence Starters

BPS Kindergarten Example



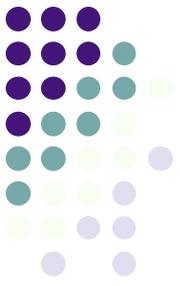
- Watch the video below
- Students in this class were learning about the words “technology” and “engineering.”
- In this example, students were debating if a table and a chair can be considered technology.
- Students were previously told that technology is something designed to solve a problem or make lives easier.

Debrief of Videos



- Discussion Questions:
 - What did you notice in these videos?
 - Were students pointing out evidence by referring to data?
 - Were students building on or disagreeing with each other's ideas?
 - Were students using scaffolding to form their arguments?
 - Were students engaging in *arguing from evidence* without “arguing”?

Extension Activity – Creating & Sharing Classroom Tools



- Either independently, or in groups:
 - Create a tool to use in your classroom to facilitate argumentation among students. Example tools might include: an anchor chart, a slideshow for students (i.e. a PowerPoint), or a graphic organizer
- In a future meeting, share this tool with other teachers for feedback