Teaching and Learning with the Science and Engineering Practices:
Evaluating Information & Synthesis

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Agenda

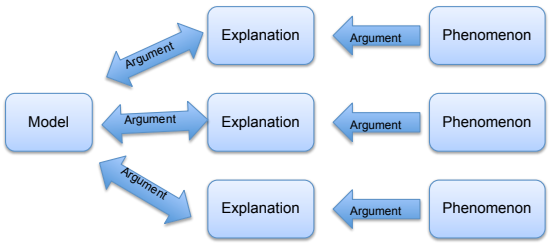
- Overview
- Activity 1: Discussion – "Can do" and "Did I" document
- Discussion: Share Explanation, Argument and Model Figure
- Activity 2: Obtaining, Evaluating and Communicating Information Lesson from NGSS@NSTA
- Activity 3: Create a representation or grouping of the 8 practices
- Activity 4: Feedback on Next Steps

PowerPoint at: http://www.katherinelmcneill.com

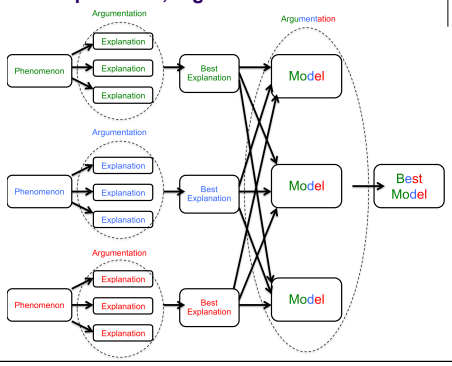
Activity #1 - Discussion of "Can Do" and "Did I"

- With your group, discuss the "Can Do" and "Did I" statements and complete the feedback document:
  - How did you use them?
  - What worked well?
  - What didn't?
  - What would make them more usable for that purpose?
  - What other uses might you recommend?

Figure from Last Session - Relationship between explanations, models and argumentation

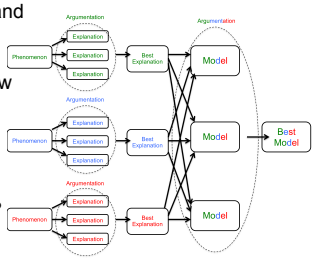


Revised Figure – Relationships between explanation, argumentation and model



Revised Figure – Relationships between explanation, argumentation and model

- What are the strengths and weaknesses of this representation? Any recommendations on how to change it?
- What is important for students to understand about these differences? How does this change across grades k-12?



Activity 2: Obtaining, Evaluating and Communicating Information Lesson from NGSS@NSTA

- *Obtaining, evaluating and communicating information occurs through reading and writing texts as well as communicating orally. Scientific information needs to be critically evaluated and persuasively communicated as it supports the engagement in the other science practices.*
- With Your Group:
  - Conduct part of a lesson from NGSS&NSTA identified as aligning with this practice
  - Discuss with your group how well you think the lesson aligns with Practice 8 and what do you see as the key characteristics of this practice

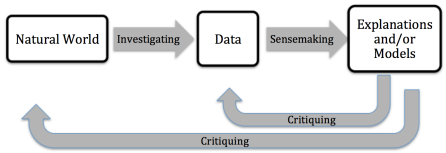
Investigating Reproductive Strategies (Middle School)

- http://ngss.nsta.org/Resource.aspx?ResourceID=20
- Abstract – Students work in pairs to compare an organism that reproduces sexually with one that reproduces asexually. As a class, students share their comparisons and generate a list of general characteristics for each model or reproduction, and discuss the advantages and disadvantages of both.

Investigating Reproductive Strategies (Middle School)

- With your group (15 min):
  - Fill in the student table for the 2 organisms that we provided you
  - Look over the NGSS@NSTA summary and/or Appendix F for Practice 8
  - Discuss:
    - How well do you think this lesson aligns with practice 8? Why?
    - What do you see as the key characteristics of practice 8? Why?

8 Science Practices



Investigating Practices	Sense-making practices	Critiquing Practices
1. Asking questions 3. Planning and carrying out investigations 5. Using mathematical and computational thinking	2. Developing and using models 4. Analyzing and interpreting data 6. Constructing explanations	7. Engaging in argument from evidence 8. Obtaining, evaluating and communicating information

Activity 3: Create a representation and/or grouping of the 8 practices

- Think about an audience that is new to the 8 science practices in NGSS.
- Create a group, figure or other way to simplify the 8 practices while simultaneously trying to highlight what you think is "new" or "innovative" about them compared to traditional science instruction.

Activity 4: Feedback on Next Steps

- *What resources do you think would be most useful to develop/identify for the BPS science community?*
- Examine Resources we discussed (10 min)
  - Walk around the room and look at the resources
    - Add any comments or suggestions on the chart paper
  - Add to the blank chart paper any additional resources you think would be useful
- Prioritize Resources (10 min)
  - 2 green stickies – most useful
  - 2 pink stickies – least useful
- Discuss Trends and Next Steps (15 min)

Contact Information

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- Workshops
  - Has the PowerPoint