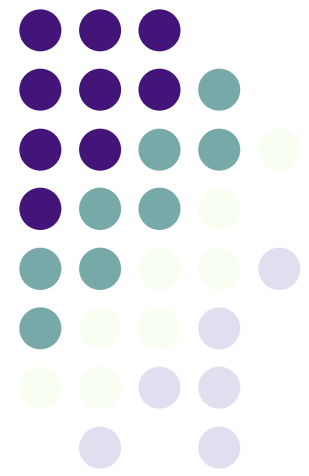
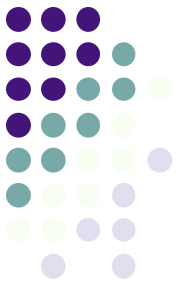


Asking Questions

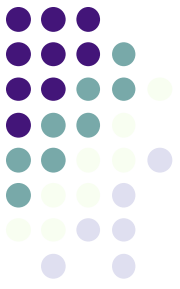




Agenda

1. Asking Questions About Discrepant Events
2. Snails Activity
3. Unpacking The Science Practice
4. How Asking Questions Progresses Across Grades

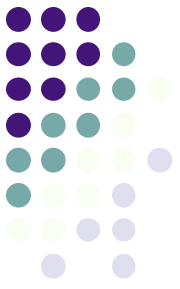
Asking Questions About Discrepant Events



The Task:

- Click on [this link](#) and select a video of a discrepant event to watch
- Using the Question Sentence Starter handout, write on a sticky note one question that comes to mind after watching the video you selected
- Share out your question once everyone has had a chance to write at least one down

Would <ul style="list-style-type: none">• Would...?• Would there...?• Would you...?	Why <ul style="list-style-type: none">• Why do you think...?• Why would...?• Why can...?• Why is...?• Why do...?
What <ul style="list-style-type: none">• What if...?• What will happen if...?• What would happen if...?• What caused...?• What might...?	Will <ul style="list-style-type: none">• Will...?• Will there...?
When <ul style="list-style-type: none">• When...?• When you...?• When would...?• When will...?• Where can...?	How <ul style="list-style-type: none">• How did...?• How will...?• How can...?• How does...?
Where <ul style="list-style-type: none">• Where...?• Where would...?• Where can...?• Where will...?	If <ul style="list-style-type: none">• If...?• If the...?• If you...?• If I...?• If it...?



Asking Questions About Discrepant Events

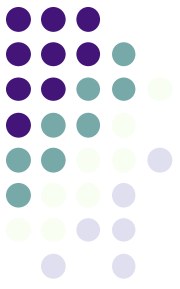
The Instructional Leadership Science Practices website defines the practice of “asking questions” as:

Scientific questions lead to explanations of how the natural world works and can be empirically tested using evidence

When students engage in this science practice they:

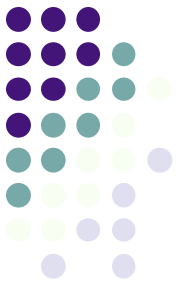
- Ask questions to develop or refine a model or explanations about the natural world
- Ask questions that can be answered using evidence from investigations or gathered by others

Asking Questions About Discrepant Events



Discussion Questions:

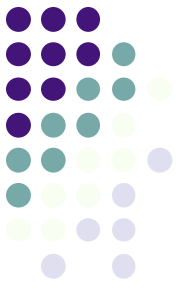
- Do any of the discrepant event questions align with the definition of the science practice of “asking questions?”
 - If yes, which one(s) and why?
 - If no, why not?
- What do you feel is an advantage and/or a disadvantage of having students use the Question Sentence Starters handout to ask questions?



Snails Activity

The Context:

- This activity comes from the FOSS 7th grade unit on Diversity of Life. Before students observe the snails, they are asked to write what they already know about snails, and what they would like to learn about these organisms.
- If you want more information about the lesson from which this activity came from, see the Snails Lesson Plan handout



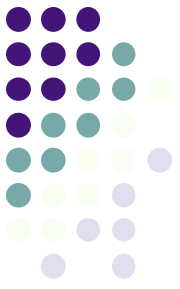
Snails Activity

The Task:

- Write down questions that you have about snails before making observations.
- Make observations of snails. If you are watching videos of snails instead of observing live snails, click on one of the videos below
- Write down questions that you have about snails after making observations.



Image is from Wikipedia



Snails Activity

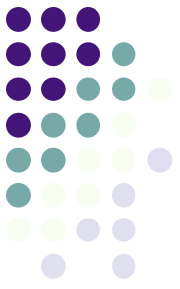
Note – Remember that this science practice entails students asking **questions that can be empirically tested*

The Task:

- With this definition in mind, work in small groups to sort the questions that you generated (both before and after the observations) into the categories of “testable questions” and “untestable questions”



Image is from Wikipedia



Snails Activity

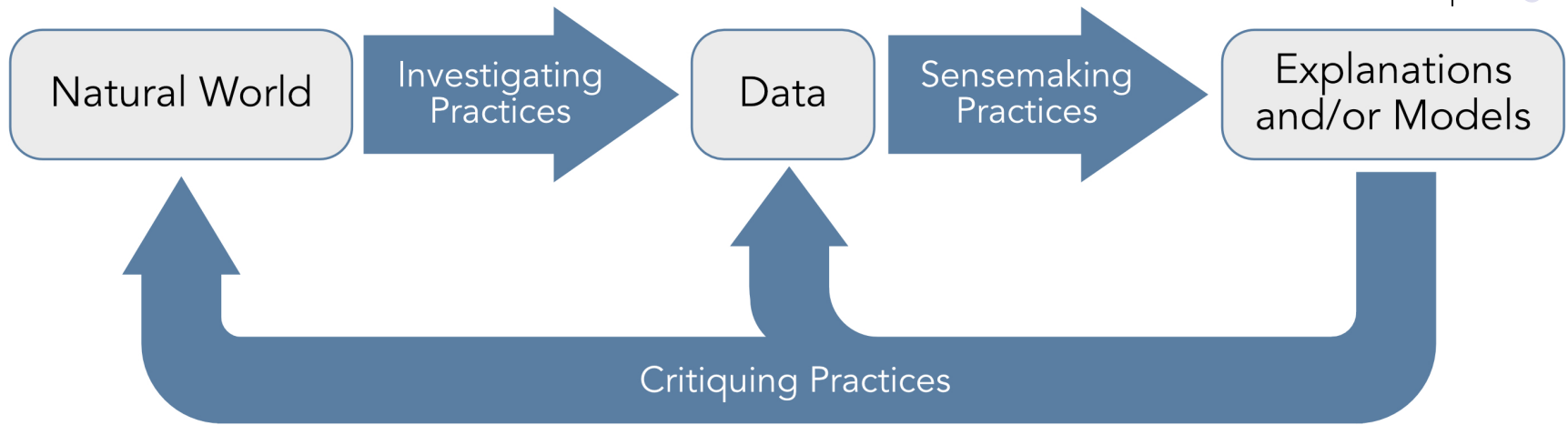
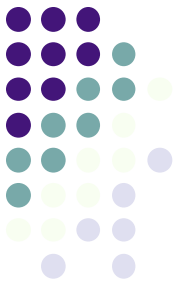
Discussion Questions:

- What group (testable or untestable) did most of the questions that you generated fall under? Why do you think this is the case?
- Where there any questions that you found difficult to sort? What about these questions do you think made them challenging to sort?



Image is from Wikipedia

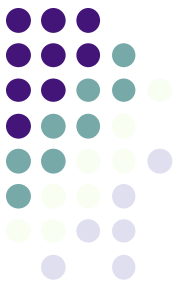
Unpacking the Science Practice



Investigating Practices	Sensemaking 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

(McNeill et al., 2015)

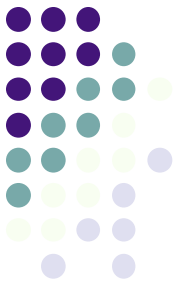
Unpacking the Science Practice



From Appendix F of the NGSS:

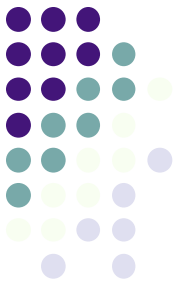
- Scientific questions can be driven by curiosity about the world; inspired by the predictions of a model, a theory, or findings from previous investigations; or stimulated by the need to solve a problem.
- Scientific questions are distinguished from other types of questions in that the answers lie in explanations supported by empirical evidence, including evidence gathered by others or through investigation.
- It is important to realize that asking a question also leads to involvement in another practice. For example, a student can ask a question about data that will lead to further analysis and interpretation.

Unpacking the Science Practice



Discussion Questions:

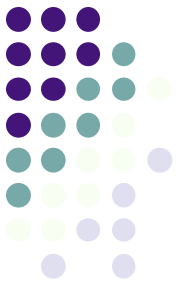
- What benefits do you think engaging in this science practice has for students?
- What do you think your students would find challenging about asking scientific (i.e. testable) questions? How could you help them with these challenges?



How Asking Questions Progresses Across Grades

The Task:

- Read the descriptions of “Asking Questions” for grades K-2 and grades 3-5 on the NSTA Science Practices Progression handout.
- Conduct a think-pair-share around the following questions:
 - How are students “asking questions” in these grades?
 - How does their engagement in this science practice progress across the grade bands being focused on?
- Repeat the first two steps for grades 6-8 and grades 9-12.



How Asking Questions Progresses Across Grades

Discussion Questions:

- In what ways did you engage in “asking questions” during the discrepant events and the snails activity?
- What questions do you still have about this science practice?