



Data, or it Didn't Happen

Lisa Ballard and Sara Pursel

Summary

This lesson is aimed at helping students improve their skills with claims, evidence, and reasoning. There are two case studies available, one on ocean acidification and one on invasive species. Students will watch an introduction video, read and explore information on the topic, then answer prompts based on data (temperature, salinity, and pH for ocean acidification, mud shrimp sampling with carapace size and sex for invasive species).

[TAGS: ocean acidification, invasive species, claim-evidence-reasoning]

Key Concepts

- Claims, Evidence, and Reasoning
- Ocean acidification
- Invasive species

Objectives

- Analyze and interpret data
- Use mathematics and computational thinking
- Engage in argument from evidence
- Obtain, evaluate, and communicate information

Materials

- Background information and case study for the topic of choice
- Student sheet and data for the topic of choice
- Computer or electronic device with internet for the videos, resources, and/or data

Procedure

Lesson considerations: Depending on the level of your students you may want to pre-teach vocabulary and/or have a discussion or check in with your students after the video (step 2).

1. Give students the choice between the two case studies or decide which will be used.
2. Show or have the students watch the video introduction to the topic they chose.
3. Provide the students time to read and explore the information and resources that accompany their case study.
4. Provide the students time to answer the prompts on the student sheet that accompanies their case study.

Assessment

- **Formative assessments**—informal observations and interactions with students as they work through the prompts will give you feedback about what the students are understanding and what they might need help with. For the invasive species case study there is a list of check in questions that could be used for a quick survey of student learning.
- **Summative assessments**—for this activity, a summative assessment would be how well a student answers the prompts. A suggested rubric that can be used to measure components of analytical thinking is provided that may be useful.

Additional Resources

Invasive Species Resources

- [Video on invasive species](#)
- [Article on mud shrimp](#)
- [Article on European starling introduction](#)
- [Google Map of Yaquina Bay](#)
- [Definition of ballast water](#)
- [Shrimp Picture](#)

Ocean Acidification Resources

- [Video on OA](#)
- [20 Facts About OA](#)

Extensions or adaptations

- Invasive Species Extension: Using a large data set, have the students compare their predictions to Dr. Chapman's data (data coming soon hopefully).
- Invasive Species Adaptation: Have students work in pairs, each one analyzing a different graph and after sharing their answers they work together on the final prompt.
- Invasive Species Adaptation: Modify the work so that students only use one graph to make a prediction.
- A general extension is that students can do both of the case studies.