

Extension Lesson Plan for Teachers

Data Analysis and Science Writing

This lesson is designed as an optional follow up to Sonoma Water's classroom visit.

Time: 45-minutes

Essential Question: How do climate extremes like drought impact salmon?

Objectives:

- Students will apply concepts of statistics and probability (mean and mode).
- Students will consider limitations of data analysis (e.g., measurement error).
- Students will analyze and interpret data to determine similarities and differences in findings.
- Students will use evidence to construct an explanation for real-world phenomena (the impact of drought on salmon).

NGSS Standards:

MS-LS2-1 Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.

Materials: Pencils, Scratch Paper, Calculators, Drought Notebook

Activity/Time	Description
Combine Class Data p.14 (10-minutes)	Assign each group a number 1-10 and ask them to share out their temperature, pH, and turbidity results. Have students follow along and record the data in the chart on page 14 in their drought notebook. Provide students with time to calculate the averages and mode, or do this together as a class.
Group - Share (5-minutes)	Ask students to discuss the following questions: How does your data compare to other groups results? Why might your results be different than other groups results, even though we all did the same experiment?
CER Practice (15-minutes)	Ask students to get out a piece of scratch paper and a pencil or a whiteboard and marker. Show students one of the following videos. Then, ask students to practice writing a CER. Optional support resources listed below. Video: My Dad is a Space Alien "Claim: Her dad is a space alien OR her dad is not a space alien. What evidence do you have to support your claim? Then, your reasoning explains why or how the evidence makes sense". Video: Doritos Commercial (00:00 - 00:21)  

Activity/Time	Description
CER p.14 - 15 (10-minutes)	Ask students to write a CER by completing page 15 in the drought notebook. Optional: Utilize the CER checklist for students in the resources below.

Example CER (p. 15)

Claim: Drought impacts salmon by... **reducing water quality and making it harder for salmon to survive.**

Evidence: In our experiment, we created a model of a typical creek and a creek experiencing drought. Compared to the typical creek model, in the drought model, we noticed...

- Dissolved oxygen was higher/**lower**/equal (circle one)
- Temperature was **higher**/lower/equal (circle one)
- pH was higher/**lower**/equal (circle one)
- Turbidity was higher/lower/**equal** (circle one)

Reasoning: How does the evidence support your claim? **Salmon ideally need dissolved oxygen levels between 7-14ppm, temperatures between 45°F and 60°F, a pH of 6, 7, or 8, and a lower turbidity level to thrive. In our model, we noticed temperatures were higher during a drought, and pH lower than what is healthy for salmon, indicating the potential for reduced water quality for salmon during a drought.**

Resources

Article on Claim–Evidence –Reasoning (CER) by Model Teaching

www.modelteaching.com/education-articles/writing-instruction/claim-evidence-reasoning-cer



CER Student Graphic Organizer by Model Teaching

www.modelteaching.com/wp-content/uploads/2019/04/CER-Student-Graphic-Organizer.pdf



CER Checklist for Students by Model Teaching

www.modelteaching.com/wp-content/uploads/2019/04/CER-Checklist.pdf



After the lesson...

Feedback: We would love your feedback!

You can submit an evaluation here:

<https://www.sonomawater.org/6thGradeDroughtAfterthelesson>

For questions regarding this lesson, contact: Trisha.Meisler@scwa.ca.gov



**Sonoma
Water**