

Empowering educators to teach data literacy skills with local mariculture research

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Project Overview

This project leverages the power of Data Nuggets—classroom-ready STEM activities based on authentic scientific data and research—to improve data literacy and science engagement among middle and high school students in Alaska’s EPSCoR coastal communities. We will provide professional development for teachers that connects local mariculture research to data-centered science instruction, helping educators foster critical thinking and scientific reasoning in students.



Project Goals

- Produce educational activities designed to contextualize student learning through place-based education.
- Engage students with local research to improve data and scientific literacy with connections to Alaska mariculture.
- Provide professional development (PD) on teaching science with data tailored to participants’ needs and communities.
- Assess efficacy of targeted PD and support frameworks

Project Activities

Curricular Development: Work with scientists to create Data Nuggets featuring science stories and data from Alaskan mariculture efforts.

Cordova: Kelp farm efficacy - Native Village of Eyak

Valdez: Oyster farm methodology assessment - Prince William Sound College



Seward: Ocean acidification and effects on shellfish - Alutiiq Pride Marine Institute

Teacher training: Work with school districts to host PD workshops Feb-Mar 2026. Recruit 4 teachers for a virtual, professional learning cohort (PLC) to provide peer mentoring.

Education Research: Collect data on teacher attitudes (*confidence, familiarity, and interest*) towards teaching with data and place-based mariculture research to contextualize science lessons before and after engaging in either 1) a singular professional development workshop or 2) a semester-long structured-support PLC with peer mentoring.

Research Questions

1. Does targeted professional development, focused on integrating data into classrooms through Alaska-specific research case studies, improve *teachers’ understanding of, confidence in, commitment to, and interest in* integrating data into their science courses?
2. How do outcomes differ based on duration of support and depth of mentoring (i.e. one session of professional development workshop vs. semester long support in a professional learning community)?

What are Data Nuggets?

- A nationally recognized K-16 science education program that brings contemporary research and authentic data into classrooms.
- Collection of freely available classroom activities, created with scientists and teacher feedback.
- Each activity provided in multiple levels.
- Teacher guides for additional support and teaching opportunities.
- Easily integrate into existing curriculum.

DATA*Nugget*

Growing kelp for community
Featured scientist: Caitlin McKinstry (she/her) from the Native Village of Eyak. Written with Rosel Burt and Melissa Kjelvik from Prince William Sound College

Research Background:

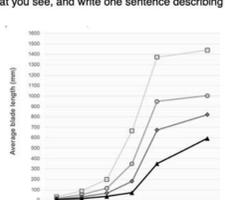
Recently, there has been a surge of interest in farming kelp at a larger scale along the Alaskan coast. Farming kelp involves cultivating kelp at a site to grow larger for harvest. Caitlin is a biologist who works for the Native Village of Eyak within the Prince William Sound of Alaska. The Tribe wants to start a kelp farm to provide a nutritious food source for its community members. Caitlin was tasked with designing the farm setup and testing how much kelp can be grown. Her first step was to find a site. She had to consider environmental factors that help the kelp grow. Kelp need particular nutrients and cool water temperatures. She also had to make sure the site was easy to get to and that it was protected from intense weather like high winds and large waves.



Scientific Data: Use the data below to answer the scientific question.

Below is a graph of the data: Identify any changes, trends, or differences you see in your graph. Draw arrows pointing out what you see, and write one sentence describing what you see next to each arrow.

Sampling Month	Depth (m)	Average blade length (mm)
December	1	32.1
January	1	48.8
February	1	250.1
March	1	686.7
April	1	1372.7
June	1	1440.4
December	3	17.8
January	3	54.8
February	3	115.4
March	3	350.7
April	3	648.8
June	3	1003.8



Interpret the data:

Make a claim that answers the scientific question.

What evidence was used to write your claim? Reference specific parts of the table or graph!

Explain your reasoning and why the evidence supports your claim. Connect the data back to what you learned about Arctic watersheds.

Your next steps as a scientist: Science is an ongoing process. What new question(s) should be investigated to build on Ariel and Jay’s research? What future data should be collected to answer your question(s)?

For more information on Data Nuggets, scan the QR code!



- Research Background: brief introduction to the context and the science concepts
- Process of science: visualizing and interpreting data, supporting claims using data as evidence, and asking questions

Professional Development Workshops

Goal: Train teachers in data literacy pedagogical strategies and resources, including an introduction to a Data Nugget about mariculture research in their community.

In-person professional development

Topics Include:

- What are Data Nuggets?
- The authentic process of science
- Visualizing data to answer scientific questions
- Constructing explanations using data as evidence
- Rubrics and evaluation



Professional learning community

Participants will implement one Data Nugget, with virtual support sessions before and after.

- Pedagogical strategies and planning
- Topic alignment with curriculum
- Report-out and discussion

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