Mountains Beneath the Ocean

An Interdisciplinary Research Simulation Task | Grades 6 through 12

Science • Geography • Mathematics • ELA • Civics

First Name _____ Last Name _____

Date _____ Class _____

Essential Question

How do scientists use evidence to discover seamounts, and how should communities decide what to investigate next?

NJSLS Science

MS-PS4-2: model reflected sound; MS-ESS2-2: explain landform change. High school extension: HS-ESS2-1, model internal and surface processes. These tasks build toward the expectations.

NJSLS Social Studies

6.3.8.CivicsPR.5: use a simulated hearing to address competing perspectives. Geographic inquiry practices: interpret a scaled model map and distinguish model locations from real places.

NJSLS ELA

RI.CR.6.1, RI.AA.6.7, RI.MF.6.6, W.AW.6.1: cite evidence, evaluate claims, combine visual and numerical information, and argue from evidence.

CCSS / CCLS Literacy and Mathematics

RST.6-8.1, RST.6-8.7, WHST.6-8.1; extensions RST.9-10.1, RST.11-12.1, WHST.9-10.1, WHST.11-12.1. Mathematics: 6.RP.A.3 and 6.SP.B.5. CCLS refers here to Common Core literacy connections.

Learning goal: combine measured evidence, a controlled investigation, quantitative reasoning, and a public recommendation. Core reading is scaffolded for Grades 6 through 8; Grades 9 through 12 add model critique and uncertainty analysis. Teaching directions are separate.

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Day 1 | A Discovery Beneath the Surface

Do Now

How could a mountain exist without being visible from a ship? Give a possible explanation.

Source A | What the Expedition Actually Found

In January 2024, the crew of the research vessel Falkor (too) traveled from Costa Rica to Chile. They investigated places where satellite measurements suggested changes in the shape of the ocean surface caused by gravity. Multibeam sonar confirmed four large underwater mountains that were absent from the bathymetric databases checked by the team. Bathymetry describes underwater depth and landform shape. The mountains ranged from 1,591 to 2,681 meters above the surrounding seafloor. The largest summit remained 1,150 meters below sea level. These were newly mapped features, not evidence that four mountains had suddenly formed. The expedition announcement documented an observation and a mapping method. It did not establish the age, eruption history, or complete biological community of each mountain. [A]

Source type: original educational paraphrase of an expedition press release. Announcement date: February 8, 2024. [A]

1. Identify one observation and one method reported in Source A. Explain how they are connected.

2. A headline calls the scientists baffled. Write a more precise headline and explain why it fits the evidence.

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