

Title: Earth Shaking, Mountain Making *Exploring the effects of the continual cycling of earth's materials over time.*

Essential Question: What geological clues can we use to understand our planet's landscape throughout time?

Guiding Questions:

- Why does Earth have such a varied landscape?
- How does water move around the planet?
- How do humans impact Earth's systems?
- How do we know earth's surface has changed over time?

Learning Targets:

1. I can **use evidence** to explain how geoscience processes have changed the Earth's surface over time.
2. I can **construct** a model that depicts the geologic history of Earth's formation.
3. I can **analyze and interpret** data on the distribution of fossils and rocks, continental shapes, and seafloor structures to provide evidence of past plate motions.
4. I can **develop** a model that traces the cycling of water, driven by the energy of the sun and the force of gravity, through Earth's systems.
5. I can **design** a method for monitoring and minimizing a human impact on the environment.

Kick Off:

4-days Lassen Volcanic National Park: Intro to California Geology. Hike up and around 4 types of volcanoes, through lava tubes & lava flows; explore hydrothermal areas. Small-group, student-taught lessons/demonstrations at each stop.

Case Study #1 (LT # 1,2,3)

Stepping up to the Plate

Overview:

Study of Earth's tectonic plates and their role in creating earthquakes, shaping mountains and volcanoes, and cycling Earth's materials.

Projects:

- Final Product preparation pieces: Website design, job assignments, and planning.
- Constructing models that demonstrate mountain and volcano formation.
- Building models to show how the cycling of earth materials occurs at tectonic plate boundaries
- Researching and collecting live links for reporting on local geologic events
- Writing and posting weekly student blogs on current geologic news and local topics

Literature Used:

Non-fiction:

Roadside Geology of Northern and Central California

[California Rocks: A guide to Geologic Sites in the Golden State](#)

Lassen Volcanic National Park's website informational text

Fiction: *Death Mountain*, Sherry Shahan

Writing Assignments:

Narrative - *A Day In the Field*, personal account of student contributions to authentic learning experiences

Informative – *How Did THAT happen?*

Students write informative blog posts that explain some of Truckee's most interesting geologic features.

Case Study #2 (LT # 4,5)

Water, Water, Everywhere and Not a Drop To Drink?

Overview:

A close look at varied earth features impacted by humans and the hydrologic cycle.

Projects:

- Final Product preparation pieces: developing and contributing to website for local geology events, blogs, earthquake updates, news etc.
- Developing models to depict the cycling of water through earth's systems
- Designing and conduct studies to understand, monitor, and minimize human impact on the local water supply

Literature Used:

Non-fiction: State park website informational text

One Earth

Fiction: *Footsteps on the Roof*, poems about the Earth

A River Ran Wild, Lynn Cherry

Writing Assignments:

Narrative - *I Am A Drop of Water*, students describe their journey through the water cycle as if they were a water drop.

Informative – *Where Did Our Town's Water Go?* Students write informative blog posts that explain the historic low

Case Study #3(LT #1,2,3,4,5)

The Never-ending Story

Overview:

Synthesizing geologic evidence and processes from Case Studies 1 & 2 to tell the story of Earth's geologic history and how it relates to our local landscape.

Project:

- Final Product Construction: Fully functional geology website for the town of Truckee, CA linked to Town of Truckee or University of Nevada, Reno website.
- Students test site links, review and edit static writing, and finalize dynamic pages for "GoLive" event at Celebration Of Learning.

<p>Argumentative - <i>How likely is it that earthquakes occur on other planets?</i> Students conduct research, formulate a claim, and argue their claim with evidence.</p> <p>Other Assessments: Students teach lessons in the field Project Rubrics Reading material quizzes Blog Posts</p> <p>Fieldwork: 4-Day Exploration of Lassen Volcanic National Park Tahoe Environmental Research Center – Plate Tectonics program, day trip Truckee Legacy Trail Interpretive Hike – day trip Mount Judah Hike – day trip</p> <p>Character/Adventure: Challenge by Choice: Summitting Cinder Cone Volcano</p>	<p>levels of our area’s lakes and reservoirs relative to the water cycle.</p> <p>Other Assessments: Student field experiments & water cycle demonstrations with project rubrics. Water cycle models Reading material quizzes Experimental design and analysis Blog Posts</p> <p>Fieldwork: Stampede & Boca Reservoirs – overnight camping</p> <p>Character/Adventure: Design and conduct an experiment in the field to answer a question about our human impact on the water cycle.</p>	
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