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

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

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.

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.

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

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