

RANCHO EL CHORRO OUTDOOR SCHOOL

BREAK IT DOWN

4TH GRADE

Lesson Goal: To better understand what the earth is made up of and how it changes through water, weathering and erosion.

Learning Objectives:

- Students will study a local watershed and understand the importance of taking care of it.
- Students will create their own portion of a stream and observe how erosion can affect an area.
- Students will study soils and rocks and how they can determine the speed that water percolates into the ground.

ACTIVITIES:

1. Students will conduct activities on a stream table to observe erosion, weathering, and patterns of water flow. They will discuss how rocks, plants, and other objects affect flow.
2. Students will conduct activities on a watershed model and discuss human and environmental influences. They will play a relay game to learn the water cycle and its influences on the physical environment.
3. Students will study rock types and conduct percolation activities to observe the differences in different rock and soil types.

VOCABULARY

clay
gravel
precipitation
watershed

condensation
igneous
sedimentary
weathering

erosion
metamorphic
silt

evaporation
percolation
stream



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Next Generation Science Standards Connections:

Standard: 4-ESS2-1. Earth’s Systems

Performance Expectation:

4-ESS2-1. Make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation.

| Science & Engineering Practices | Disciplinary Core Ideas | Crosscutting Concepts |
|--|--|--|
| <p>Planning and Carrying Out Investigations Planning and carrying out investigations to answer questions or test solutions to problems in 3-5 build on K-2 experiences and progresses to include investigations that control variables and provide evidence to support explanations or design solutions.</p> <ul style="list-style-type: none"> • Make observations and/or measurements to produce data to serve as the basis for evidence for an explanation of a phenomenon. (4-ESS2-1) | <p>ESS2.A: Earth Materials and Systems</p> <ul style="list-style-type: none"> • Rainfall helps to shape the land and affects the types of living things found in a region. Water, ice, wind, living organisms, and gravity break rocks, soils, and sediments into smaller particles and move them around. (4-ESS2-1) | <p>Cause and Effect</p> <ul style="list-style-type: none"> • Cause and effect relationships are routinely identified, tested, and used to explain change. (4-ESS2-1) |

Common Core State Standards connections, 4th grade:

Speaking and Listening Standards:

SL.1. Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 4 topics and texts, building on others’ ideas and expressing their own clearly.

SL.2. Paraphrase portions of a text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally.

SL.3. Identify the reasons and evidence a speaker or media source provides to support particular points.

Language Standards:

L1. Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.

L3. Use knowledge of language and its conventions when writing, speaking, reading, or listening.

English Language Learner Standards connections:

A. Collaborative. Bridging

1. Exchanging information and ideas. Contribute to class, group, and partner discussions, including sustained dialogue, by listening attentively, following turn-taking rules, asking relevant questions, affirming others, adding pertinent information, building on responses, and providing useful feedback.

B. Interpretive. Expanding.

5. Listening Actively. Demonstrate active listening to read-alouds and oral presentations by asking and answering detailed questions with oral sentence frames and occasional prompting and support.

C. Productive. Expanding

9. Presenting. Plan and deliver brief oral presentations on a variety of topics and content areas (e.g. re-telling a story, describing an animal, etc.).

California's Environmental Principles & Concepts and Education & the Environment (EEI) unit connections:

Principle I: The continuation and health of individual human lives and of human communities and societies depend on the health of the natural systems that provide essential goods and ecosystem service.

Concept A: Students need to know that the ecosystem goods produced by natural systems are essential to human life and to the functioning of our economies and cultures.

Concept B: Students need to know that the ecosystem services produced by natural systems are essential to human life and to the functioning of our economies and cultures..

Reflections of Where We Live, 4th grade. This unit focuses on geography and the physical and human features that define large regions of California. Students use maps, charts, pictures, and readings to become familiar with the physical environments and specific features of the regions under study, the natural resources provided by the natural systems in those regions, and the manner in which the features and resources influence human activity in different areas of the state.

Learning Objective connections:

Lesson 1, 2, 3: Describe the differences among the various regions of California, providing examples of landforms, bodies of water, vegetation, and climate in each; give examples.

VOCABULARY

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|---|---|
| clay arcilla | A natural earthy material that is plastic when wet, consisting essentially of hydrated silicates of aluminum: used for making bricks, pottery. |
| condensation condensación | The change of a gas or vapor to a liquid, either by cooling or by being subjected to increased pressure. When water vapor cools in the atmosphere, for example, it condenses into tiny drops of water, which form clouds. |
| erosion erosión | The process by which the surface of the earth is worn away by the action of water, glaciers, winds, waves, etc. |
| evaporation evaporación | A change from liquid to vapor form. |
| gravel grava | Small stones and pebbles, or a mixture of these with sand |
| igneous rocas ígneas | Produced under conditions involving intense heat, as rocks of volcanic origin or rocks crystallized from molten magma. |
| metamorphic rocas metamórficas | Altered considerably from their original structure and mineralogy by pressure and Heat. |
| percolation percolación | The slow movement of water through the pores in soil or permeable rock. |
| precipitation precipitación | Falling products of condensation in the atmosphere, as rain, snow, or hail. |
| sedimentary sedimentaria | Formed by the accumulation and consolidation of mineral and organic fragments that have been deposited by water, ice, or wind. |
| silt limo | Earthy matter, fine sand, or the like carried by moving or running water and deposited as a sediment |
| stream corriente | A body of water flowing in a channel or watercourse, as a river, rivulet, or brook. |
| watershed cuenca | The region or area drained by a river, stream, etc.; drainage area. |
| weathering intemperie | The various mechanical and chemical processes that cause exposed rock to decompose. |