

# Topography and Erosion Lab

**60 minutes**

**2-5**

Students are introduced to key terms and explore how the landscape is shaped by water. Join our Naturalists in stations as they utilize the topographical map and stream table for hands on learning and education. One group participates in the topographical map station (learning to identify the natural features of the local watersheds) while the other group is engaged at the stream table (observing the creation of valleys, cliffs and deltas while learning about erosion, deposition, meandering, undercuts, head-cuts, sandbars and more!). After 20 minutes the groups switch stations. For the final 20 minutes the groups are combined and take a short hike to Big Chico Creek to observe and discuss erosion/deposition in action!

## Next Generation Science Standards 2-5

### Second Grade

#### 2-ESS1 Earth's Place in the Universe

##### Performance Expectations

- 2-ESS1-1. Use information from several sources to provide evidence that Earth events can occur quickly or slowly.

##### SEP

- Constructing Explanations and Designing Solutions

##### DCI

- ESS1.C: The History of Planet Earth

##### CCC

- Stability and Change

#### 2-ESS2 Earth's Systems

##### Performance Expectations

- 2-ESS2-1. Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land.
- 2-ESS2-2. Develop a model to represent the shapes and kinds of land and bodies of water in an area.
- 2-ESS2-3. Obtain information to identify where water is found on Earth and that it can be solid or liquid.

##### SEP

- Developing and Using Models
- Constructing Explanations and Designing Solutions
- Obtaining, Evaluating, and Communicating Information

### **DCI**

- ESS2.A: Earth Materials and Systems
- ESS2.B: Plate Tectonics and Large-Scale System Interactions
- ESS2.C: The Roles of Water in Earth's Surface Processes
- ETS1.C: Optimizing the Design Solution

### **CCC**

- Patterns
- Stability and Change

## **K-2 Engineering Design**

### **K-2-ETS1 Engineering Design**

#### **Performance Expectations**

- K-2-ETS1-1. Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool.
- K-2-ETS1-2. Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.
- K-2-ETS1-3. Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.

#### **SEP**

- Asking Questions and Defining Problems
- Developing and Using Models
- Analyzing and Interpreting Data

#### **DCI**

- ETS1.A: Defining and Delimiting Engineering Problems
- ETS1.B: Developing Possible Solutions
- ETS1.C: Optimizing the Design Solution

#### **CCC**

- Structure and Function

## **Third Grade**

### **3-ESS3 Earth and Human Activity**

#### **Performance Expectations**

- 3-ESS3-1. Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard.

#### **SEP**

- Engaging in Argument from Evidence

#### **DCI**

- ESS3.B: Natural Hazards

#### **CCC**

- Cause and Effect

## Fourth Grade

### 4-ESS2 Earth's Systems

#### Performance Expectations

- 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.

#### SEP

- Obtaining, Evaluating, and Communicating Information
- Constructing Explanations and Designing Solutions

#### DCI

- ESS3.A: Natural Resources
- ETS1.B: Designing Solutions to Engineering Problems

#### CCC

- Cause and Effect

## Fifth Grade

### 5-ESS3 Earth and Human Activity

#### Performance Expectations

- 5-ESS3-1. Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.

#### SEP

- Obtaining, Evaluating, and Communicating Information

#### DCI

- ESS3.C: Human Impacts on Earth Systems

#### CCC

- Systems and System Models

## 3-5 Engineering Design

### 3-5-ETS1 Engineering Design

#### Performance Expectations

- 3-5-ETS1-1. Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.
- 3-5-ETS1-2. Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.
- 3-5-ETS1-3. Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

#### SEP

- Asking Questions and Defining Problems
- Planning and Carrying Out Investigations

- Constructing Explanations and Designing Solutions

**DCI**

- ETS1.A: Defining and Delimiting Engineering Problems
- ETS1.B: Developing Possible Solutions
- ETS1.C: Optimizing the Design Solution

**CCC**

- Influence of Engineering, Technology, and Science on Society and the Natural World