

Rock and Roll Geology

Grades: 3 - 6

Time: 50 minutes

Rationale and Context:

This program focuses on the concept of geologic change over time with an emphasis on the more recent geologic events (last 20,000 years) in the Lake Champlain Basin. Students will review concepts of the rock cycle and complete tests on local rock samples to better understand the characteristics of rock types found in this region. The lesson covers key events in the geologic history of the lake and our local watershed.

Teacher Background Information:

Geology is the study of rocks and soil and the processes that change them over time. Geologists work to understand the changes that have occurred in the earth and how these changes can influence the topography, human resource management, water quality and patterns of erosion, weathering and sedimentation. Geologists also study volcanoes and earthquakes and the resulting effects to both surface and deep rock layers. Geologic change has implications on everything from species diversity to habitat evolution to climate change.

Next Generation Science Standards:

| Disciplinary Core Idea | 3-5 | 6 |
|-------------------------------|---|--|
| ESS3.C | Societal activities have had major effects on the land, ocean, and atmosphere, and even outer space. Societal activities can also help protect Earth's resources and environments | Human activities have altered the biosphere, sometimes damaging it, although changes in the environment can have different impacts for different living things. Activities and technologies can be engineered to reduce people's impact on earth. |
| LS2.C | When the environment changes some organisms survive and reproduce, some move to new locations , some move into the transformed environment and some die. | Ecosystem characteristics vary over time. Disruptions to any part of an ecosystem can lead to shifts in all of its populations. The completeness or integrity of an ecosystem's biodiversity is often used as a measure of its health. |
| LS4.A | Some living organisms resemble organisms that once lived on Earth. Fossils provide evidence about the types of organisms that existed long ago. | The fossil record documents the existence, diversity, extinction, and change of many life forms and their environments through Earth's history. The fossil record and comparisons of anatomical similarities between organisms enables the inference of lines of evolutionary descent. |

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| ESS2.A | Four major Earth systems interact. Rainfall helps to shape the land and affects the types of living things found in a region. Water, ice, wind, organisms, and gravity break rock, soils, and sediments into smaller pieces and move them around. | Energy flows and matter cycles within and among Earth's systems, including the sun and Earth's interior as primary energy sources. Plate tectonics is one result of this process. |
| ESS1.C | Certain features on Earth can be used in evidence to organize the relative occurrence of major historical events in Earth's history. | Rock strata and the fossil record can be used as evidence to organize the relative occurrence of major historical events in Earth's history. |
| ESS2.B | Earth's physical features occur in patterns, as do earthquakes and volcanoes. Maps can be used to locate features and determine patterns in those events | Plate tectonics is the unifying theory that explains movements of rocks at Earth's surface and geological history. Maps are used to display evidence of plate movement. |
| ESS2.C | . | Water cycles among land, ocean, and atmosphere, and is propelled by sunlight and gravity. Density variations of sea water drive interconnected ocean currents. Water movement causes weathering and erosion, changing landscape features. |
| Cross Cutting Concepts | Patterns Structure and Function Stability and Change | Patterns Structure and Function Stability and Change. |

Learning/Behavioral Objective(s):

1. Using a timeline of "clues", we will reveal the significant time periods in the geologic evolution of the Lake Champlain Basin
2. We will discuss the rock cycle and the processes of slow and fast geologic change and human impact in the Lake Champlain Basin
3. Using geologic rock tests, students will explore the properties of rocks found in the Lake Champlain Basin and their potential value to humans.

Vocabulary:

Geology

Topography

Sedimentation

Luster

Resource

Metamorphic

Rock Cycle

Magma

Weathering

Erosion

Rock Test

Sedimentary

Igneous

Focusing Question(s):

1. How has the Lake Champlain Basin changed geologically over time?

2. What are the processes that change rocks and the earth 's surface over time?
3. What is the rock cycle?
4. How do scientists identify different types of rocks?