

Plate Tectonics & Alaska's Mountain Ranges

Developed by: Amy Dahmus

Discipline / Subject: Science

Topic: Formation of Alaska's Mountains

Grade Level: 4 and up

Resources / References / Materials Teacher Needs:

United Streaming Videos, computer & projector, EXCEL spreadsheet program.

Lesson Summary: Students will first hypothesize how the mountains in Alaska were formed. Students will research the mountains and categorize them by their origin, volcanic eruption or plate tectonics. Students will then create a spreadsheet using EXCEL to compare the mountains origins.

Standard's Addressed: (Local, State, or National)

1. ND 8.5.1 Rock is composed of different combinations of minerals. Smaller rocks come from breaking and weathering of bedrock and larger rocks. Soil is made partly from weathered rock, partly from plant remains, and also contains living organisms.
2. ND 8.3.3 Heating and Cooling cause changes in the properties of materials. Many changes occur faster under hotter conditions.
3. ND 4.7.2, 8.7.3, & 12.5.1 Climates have sometimes changed abruptly in the past as a result of changes in the Earth's crust, such as volcanic eruptions or impacts of huge rocks from space. Even relatively small changes in atmospheric or ocean content can have widespread effects on climate if the change lasts long enough.

Learning Objectives:

1. Students will first hypothesize how the mountain ranges in Alaska were formed.
2. Students will learn how Alaska's mountain ranges were developed.
3. Students will categorize the mountains by their origin.
4. Students will create a spreadsheet showing their findings.

Method of assessment for learning

Students will be assessed by their finished product and their research notes.

Procedural Activities

First, open a discussion of how students think the mountains were formed; have them write their hypothesis down on paper. Next, discuss the ways that mountain formation occurs. Give students a list of mountains found in Alaska that you would like them to research. Let students research separately or in pairs. After they have gathered their information students should categorize the mountain formation into two categories: volcanic eruption or plate tectonics. After their information has been categorized introduce students to the EXCEL program and demonstrate how to design a spreadsheet. Students will then create their own spreadsheet based on their findings.

Materials Students Need: Notebooks, paper, pencil, access to a computer.

Technology Utilized to Enhance Learning: United Streaming and a computer spreadsheet program.

Other Information: Videos on United Streaming:

Fearless Planet; Alaska

Introduction to Alaska

Life Cycle of a Glacier

Monitoring the Mount Augustine Volcano

The Northern Lights

Alaska from Tropical Seabed to Frozen Wilderness

Effects of Global Warming

Melting Glaciers

Rising Oceans

Modifications for Special Learners/ Enrichment Opportunities: Students could complete the project in pairs; they could have a limited number of mountains to research. Students could also produce a graph instead of a spreadsheet.