Carving the Canyon

Zion National Park Distance Learning

Grade Level: Upper Elementary

Subjects: Earth Science, Geography, Landscapes, Paleontology

National/State Standards:

NS.K-4.2 Physical Science

NS.K-4.3 Life Science

NS.K-4.4 Earth and Space Science

NS.5-8.3 Life Science

NS.5-8.4 Earth and Space Science

NSS-G.K-12.1 The World in Spatial Terms

NSS-G.K-12.3 Physical Systems

NGSS Standards Addressed 4th grade:

ESS1.C: The History of Planet Earth

ESS2.A: Earth Materials and Systems

ESS2.B: Plate Tectonics and Large-Scale System Interactions

Overview: *Carving the Canyon* introduces students to the unique and complex geologic story of Zion National Park and the southwest. This interactive program will allow students to gain a deeper understanding of rock types and geologic processes (such as deposition, lithification, erosion, and weathering). Students interact with park rangers via the internet to discuss the formation of this canyon, and then engage in a critical-thinking activity about erosion and engineering. The program lasts approximately one hour.

Lesson Objectives: Students will be able to:

- Define deposition, erosion, and weathering
- Understand the basic geologic processes of sedimentary rock and canyon forming.
- Recognize the huge expanse of geologic time and the current-day implications of geology.

Procedure:

The ranger will introduce themselves and Zion National Park to the students, as well as the National Park Service.

1. Deposition: Ranger will review the term deposition, and discuss the three different types of rocks. Students will then learn about paleo environments, and be introduced to the different ancient landscapes that deposited the sediment that has become the rock layers of Zion we see today. Rangers will ask students to share observations about the ancient landscapes they see, and discuss how drastically the earth's surface has changed.

2. Lithification: Rangers will discuss the elements that go into creating a rock, and demonstrate rock formation to the classroom through a basic ‘make a rock’ experiment.
3. Uplift: students will demonstrate the tectonic activities of uplift, and be taught how uplift affected the Colorado Plateau. Rangers will review plates and tectonic activity, as well as touch on volcanism.
4. Erosion and weathering: Rangers will show examples of erosion and weathering throughout the park, showing how geology is still taking place in the park. Ranger will quiz students on the difference between erosion and weathering, and show short videos of current geology in action at Zion.
5. Critical Thinking: Rangers will pair up students, and then discuss a new project that Zion is proposing to build an additional welcome center. Students will act as geologists and hear location proposals for the new building. They will then be asked to evaluate the location in geologic terms. They will discuss with their partner after each proposal, and then share their conclusion with the class.