A Self- Guided Field Trip to Pinnacles National Park

Purpose:

The purpose of this project is to provide a self-guided educational tour (hike) of Pinnacles National Park for educators and/or school field trips. This project includes: 1) A Field Trip Planning Guide, 2) Two pre-visit NGSS standards-aligned lessons (targeted to grades 4-8), 3) An on-site field trip lesson plan that includes a map and scripted hike of Pinnacles NP, and 4) A post-visit reflection lesson. The overall goal of this project is to provide a "one stop shop" for educators who wish to bring their students on an educational field trip to Pinnacles National Park.

Essential Questions:

- How can I (as an educator) plan and carry out an educational field trip to Pinnacles National Park?
- What are some of the natural phenomena that can be seen/experienced at Pinnacles National Park?
- What processes are responsible for the creation of the Pinnacles rock formations?

Pre-Visit Lessons:

- Field Trip Planning Guide: Includes guidelines and suggestions in the form of a question and answer document so that educators can plan a successful field trip to Pinnacles National Park.
- Pre-Visit Lesson #1: Pinnacles Geology: Includes a lesson plan and supporting materials for the geology and formation of the Pinnacles rock formations.
- Pre-Visit Lesson #2: Introduction to Pinnacles National Park: Includes a lesson plan and supporting materials for an introduction to the natural phenomena students can expect to see and experience at Pinnacles National Park, as well as behavior expectations while at the park.

On-Site Learning Activities:

- Pinnacles Field Trip Hike Lesson: Includes a lesson plan, hiking map, and scripted guide that can be used during a field trip to Pinnacles National Park.

Post-Visit Lesson:

- Field Trip Reflection Lesson: Includes a lesson plan where students reflect and review their experiences at Pinnacles National Park in a productive group work format. Students will create a poster and conduct a gallery walk.

Next Generation Science Standards:

- **Grade 4 PE:** 4-ESS1-1. Identify evidence from patterns in rock formations and fossils in rock layers to support an explanation for changes in a landscape over time.
    - DCI- ESS1.C The History of Planet Earth- Local, regional, and global patterns of rock formations reveal changes over time due to earth forces, such as earthquakes. The presence and location of certain fossil types indicate the order in which rock layers were formed. (4-ESS1-1)
    - DCI ESS2.A: Earth Materials and Systems- 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)
- **Grades 6-8 PE:** MS-ESS2-2. Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.
    - DCI ESS2.A: Earth's Materials and Systems- The planet's systems interact over scales that range from microscopic to global in size, and they operate over fractions of a second to billions of years. These interactions have shaped Earth's history and will determine its future. (MS-ESS2-2)

- DCI ESS2.C: The Roles of Water in Earth's Surface Processes- Water's movements—both on the land and underground—cause weathering and erosion, which change the land's surface features and create underground formations. (MS-ESS2-2)

Annotated Bibliography:

Mullally, L., & Mullally, D. (2015). *Hiking Pinnacles National Park: A guide to the park's greatest hiking adventures.* Falcon Guides.

This is a hiking guide to Pinnacles National Park. It contains information about hikes of varying degrees of difficulty, maps, trail descriptions, pictures, and information on the region's ecology and geology. This book will be very useful in developing the self-guided hiking map as well as the information for the points of interest along the trail.

National Park Service. (2022, June 11). *How pinnacles formed*. Pinnacles National Park California. Retrieved July 30, 2023, from: https://www.nps.gov/pinn/learn/nature/how-pinnacles-formed.htm

This site introduces the geologic formation of the Pinnacles rock formations. It covers the volcanic origins of the rocks, their movement along the San Andreas Fault, and the weathering and erosion that created the formations we see today. This information will be used in creating the pre-visit lesson on the geology of the Pinnacles rock formations.

National Park Service. (2023, March 7). *Field trips*. Pinnacles National Park California. Retrieved July 30, 2023, from: https://www.nps.gov/pinn/learn/education/classrooms/fieldtrips.htm

This site contains information regarding the logistics of bringing a field trip to the park. While I have learned that some of the information on this page is no longer accurate, it still contains a lot of relevant information. It is a good starting point and I will be helping to update and create a more current version of this resource.