



Changes to the Earth Teacher Pacing Guide

This unit was developed with southern and rural Nevada and the Next Generation Science Standards in mind.

This unit was designed for fourth grade and focuses on the NGSS standards **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.** However, it can be used for other grade levels and areas as well.

These activities are listed in their recommended order. This order will help to deepen student understanding by building on concepts from activity to activity. However, they were also designed to provide students with enough information that they will make sense on their own.

Lesson Titles	Standard(s)	Timing	Format	Activity Description	Notes
Types of Weathering Video	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.	4 min.	Video	This video introduces students to the 4 main types of weathering. Students observe the effects of the 4 types of weathering at Deer Creek Hills.	
Types of Weathering Activity Guide	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.	10-15 min.	Fillable PDF	This activity page encourages students to record the effects of the 4 types of weathering as they watch the video. Students apply this knowledge by matching photos of rocks to the 4 types of weathering.	
Choose one of the following two options					
Erosion in the Great Basin	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.	30 min.	Fillable PDF experiment	This activity page guides students through an experiment to observe how wild horses can change the land and effect erosion.	Rural NV focused
Formation of Red Rock Canyon	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.	20 min.	Fillable PDF experiment	Students will conduct an experiment to learn about the effects of chemical weathering by placing rocks in carbonated water or soda, and tap water. They will compare them through a scratch test and visual comparison. This is to provide them context to understand that the rocks are red in Red Rock Canyon due to the oxidation of the iron in them	Southern NV focused
Rock Journaling	4-ESS2-1: Make observations and/or measurements to provide	20-30 min.	Fillable PDF	This guide provides instructions for students to engage in the scientific practice of nature	

	evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation.			journaling. Students are guided to observe a rock and make detailed drawings and notes of their observations. Students are guided to consider how their rock may have been weathered over time based on evidence they have recorded in their drawing.	
Life Story of a Rock	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.	30 min.	Fillable PDF	This activity page encourages students to make observations of a rock. Students are challenged to think about how their rock has changed over time, and write a story to describe the changes their rock has undergone.	