

Module 4: Learn from the Past Core Ideas: LS4: Biological Change: Unity and Diversity				
Prerequisite Learning: <i>1.ESS1.13, 2.ESS1.1, 3.ESS1.1,</i> 3.LS4.1-2, <i>4.ESS1.2,</i> 4.LS4.1	Percent of Time: 11%			
Standard	Questions and Phenomenon Prompts	Module Vocabulary	Teacher Background/ Clarification Statement	
 5.LS4.1 Analyze and interpret data from fossils to describe types of organisms and their environments that existed long ago. Compare similarities and differences of those to living organisms and their environments. Recognize that most kinds of animals (and plants) that once lived on Earth are now extinct. Learning Targets: Understand that a collection of fossils and their placement in chronological order in sediment layers documents the existence and change of many life forms throughout the history of life on Earth. Identify patterns between any given set of sedimentary layers and the age of those layers. Use data (tables, graphs, charts, images) to identify periods of time for which changes can be observed. Example: a fossil layer with very few aquatic organisms next to a fossil layer with many types of aquatic organisms. Organize data (tables, graphs, charts, images) to allow for the identification, analysis, and interpretation of similarities and differences in organisms today. Example: a trilobite that lived in water, mostly a bottom-dweller that could curl up much like today's pill bugs, but using fossil evidence, scientist sthink that some were capable of swimming.) Observe patterns in the data to determine evidence for the existence, diversity, extinction, change in environments, and change inlife forms 	Whatevidence shows that some extinct organisms are related to the organisms of today? What clues infossils tell you about the environments that they lived in? Analyze the phenomenon of dodo extinction. How did this happen? Investigate the phenomenon of a trilobite, a sea fossil, being found in the Smoky Mountains by an 11-year-old girl in 2018.	Fossil Extinct Endangered Paleontologist	This standard asks students to make claims about past environments and extinct organisms using data from fossils. Evidence can be from sets of fossils ordered chronologically in rock layers, sets of fossils found geographically, or by comparing the structure of extinct organisms to similar organisms to similar organisms still living. Students do not need to know individual species or geological eras.	



(time periods and sedimentary layers, when organisms emerged,	How do we know	
changed or went extinct).	about extinct species?	
• Recognize in the data that most kinds of animals and plants that once		
lived on Earth are now extinct.		
Crosscutting Concepts:		
 Structure and Function-Students attribute the shapes of sub- 		
components to the function of the part.		
Science and Engineering Practice:		
• Engaging in argument from evidence- Students create and identify		
evidence-based arguments and consider whether an argument is		
supported by evidence or relies on opinions or incomplete		
representations of relevant evidence.		
5.ESS1.7 Use evidence from the presence and location of fossils to determine	How do people date	The emphasis is on using
the order in which rock strata were formed.	eventsinEarth's	an understanding that the
	planetaryhistory?	lowest layers of rock were
Learning Targets:		deposited first and each
• Explain how fossils that are found in different layers of rock are used to		layer closer to ground
establish relative ages of events like Ice Ages, earliest evidence of life, mass		level is newer. This can be
extinctions.		ages of major events in
		Farth's history
Crosscutting Concepts:		
Scale, Proportion, and Quantity- Students become familiar with sizes		Natural processes such
immensely large or small or durations extremely short or long.		as earthquakes or
		flowing water can reveal
Science and Engineering Practice:		deep layers of rock and
 Analyzing and interpreting data- Students should organize data 		allow us to recreate a
(observations and measurements) in a manner which facilitates further		history of Earth using
analysis and comparisons.		fossil patterns.
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