Junior Paleontology Lab

Learning Objectives

- Discover what Earth was like during the time of the dinosaurs, and what caused their extinction
- Learn about the process of fossilization while digging for fossils
- Compare and contrast different dinosaurs and animals that are alive today to determine how each organism adapted to its environment
- Use paleontological skills to help the museum discover dinosaur bones

21st Century Skills

- Critical Thinking and Problem Solving
- Communication and Collaboration
- Information Literacy

Colorado Academic Standards Addressed

Grade level	Colorado State Standard(s) addressed	Activity and description
3	History Standard #1: Use a variety of sources to distinguish historical fact from fiction	Adaptation Adventure: Students will use clues from Earth's history to piece together a prehistoric timeline
4	Life Science Standard #2: Comparing fossils to each other or to living organisms reveals features of prehistoric environments and provides information about organisms today Geography Standard #1: Use several types of geographic tools to answer questions about the geography of Colorado	Dino Dig: Students will excavate dinosaur bones and determine how they are similar and different to other fossils and extant animals Fossil Formation: Students will learn about the geology of Colorado during the Mesozoic Era
5	Geography Standard #1: Use various geographic tools and sources to answer questions about the geography of the United States	Adaptation Adventure: Students will learn about continental drift during the Mesozoic era and why the continents look the way they do today
6	Life Science Standard #1: Changes in environmental conditions can affect the survival of individual organisms, populations, and entire species	Adaptation Adventure: Students will learn about prehistoric events and how dinosaurs either perished or adapted to survive

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Important Vocabulary

Dinosaurs: A group of extinct reptiles that lived during the Mesozoic era, these reptiles ranged in size, but were often very large, fossilized remains of dinosaurs are how we study them today

Extinct: An entire species that is no longer alive, for example dinosaurs

Extant: A species that is still alive today, for example lions

Fossils: Preserved remains of a plant or animal that are found in sedimentary rock and can tell scientists about the organism's life. Fossilization occurs when the organic material in a plant or animal is replaced with minerals

Herbivore: An animal that only eats plant matter to get energy

Carnivore: An animal that eats other animals to get energy

Mesozoic Era: A period of Earth's history that lasted from 248 million years ago until 65 million years ago when dinosaurs lived on Earth; the Mesozoic era is split up into three periods the Triassic Period, the Jurassic period and the Cretaceous period.

Triassic Period: The first period in the Mesozoic era lasting from 248-205 million years ago, during this period the supercontinent Pangea was formed and dinosaurs first evolved

Jurassic Period: The second period in the Mesozoic era lasting from 205-138 million years ago, in this period the continents were split up into two large land masses

Cretaceous Period: The third and final period in the Mesozoic era lasting from 138-63 million years ago, during the Cretaceous period the continents started to look like they do today. At the end of this period a large meteor hit earth killing 50% of the life on earth, including most of the dinosaurs

Paleontologists: A scientists who studies fossils

Paleontology: The study of fossils

Sedimentary Rock: Rock that is formed by tiny particles or sediments being compressed together, this type of rock is best for forming fossils

Adaptations: Qualities that animals possess that allow them to survive in their current environment

Mutations: Changes in the DNA code of an animal that can lead to new adaptations

Optional (and Highly-Recommended) Pre- and Post-Lab Activities

Pre Lab:

Timeline Tour: Learn about the periods of the Mesozoic era by having students make a time line of this era. Label all major events that happened (for example extinctions) as well as what animals or plants were alive and what the continents looked like.

Size me up: Have students guess how large the largest dinosaur was and how small the smallest dinosaur was, try to model how large or small they were. Discuss why there might have been such a large difference between these two animals and why one evolved to be so large and why the other stayed small.

Post Lab:

Fossilize a leaf: Discuss with students about the different types of fossils that can form and how paleontologists can utilize them to learn about our prehistoric world. Tracks, eggs/nesting sites, and amber are all types of fossils that we normally don't think about. Amber is fossilized tree sap that can sometimes contain small insects or animals, this can help paleontologists learn about life in the Mesozoic era. After discussing, students can fossilize a leaf in 'amber'.

- To make the fake amber, mix yellow and orange food coloring into clear glue. Place a small leaf on to wax paper and slowly drop the glue onto the leaf, letting it dry between new applications.