

! Carnegie
Museum
of Natural
History

Fascinating Fossils

A 1-hour tour for Preschoolers–First Graders
Teachers' Guide

Carnegie Museum of Natural History
Division of Education

www.CarnegieMNH.org/doi

Concepts

Fossils were once living animals or plants. Many of these animals or plants no longer live on Earth—they've become extinct. When trying to understand the bodies of extinct life, we can look at modern animals and plants and compare their parts to those of the fossils. Parts that are similar were probably used in the same way then as they are now.

Dinosaur bones are examples of fossils. Fossilized bones often feel like rocks, because minerals filled up the spaces inside the bones and may have taken the place of much of the bones themselves. When we dig up fossils, we often have to put them together like puzzles.

Not all fossils are dinosaurs.

Other animals lived at the same time as the dinosaurs.

All life evolves. Fossils show us a record of these changes in the past.

Fossils only preserve some information about animals or plants that lived in the past. Many things we will never know, because we cannot see extinct creatures or plants today. For instance, we cannot know what color they were. We can only make educated guesses about extinct animal behaviors and the sounds they made. We rarely find fossilized evidence of soft body parts.

State Standards

Science and Technology

3.3.4 Know that some organisms have similar external characteristics—these relate to similar lifestyles and environments.

Compare extinct life forms to living life forms.

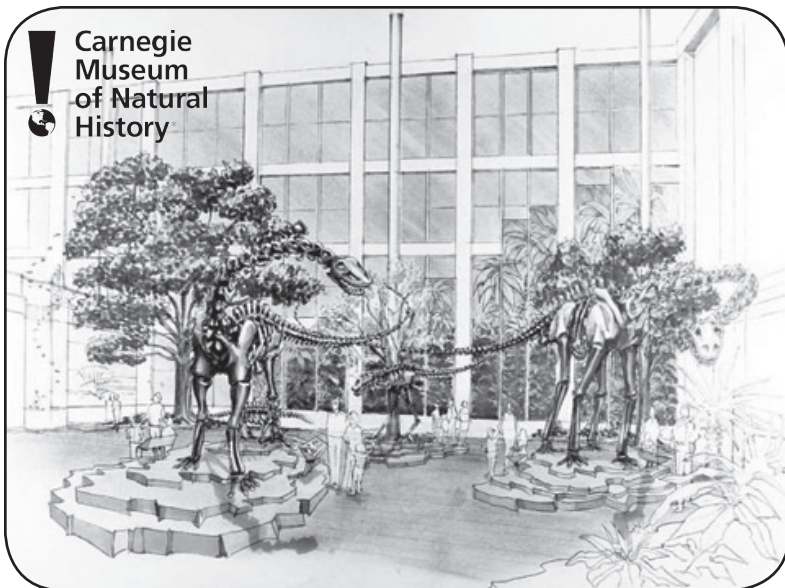
Describe fossils and the type of environment they lived in.

Environment and Ecology

4.7.4 Identify plants and animals that are extinct and explain why.

Suggested Pre-Visit Activities

1. Your students might compare pictures of skeletons to the fleshed-out bodies of living animals. Dinosaurs are a good example to use because there is so much information available about them. Explain that all we have of dinosaurs are bones, teeth, and footprints. Point out that dinosaurs also had skin, muscles, stomachs, etc. when they were alive. Ask the children what they think happened to all these parts. Do they think we find fossilized stomachs and muscles? Write their answers down and revise them after learning about dinosaurs on the tour.



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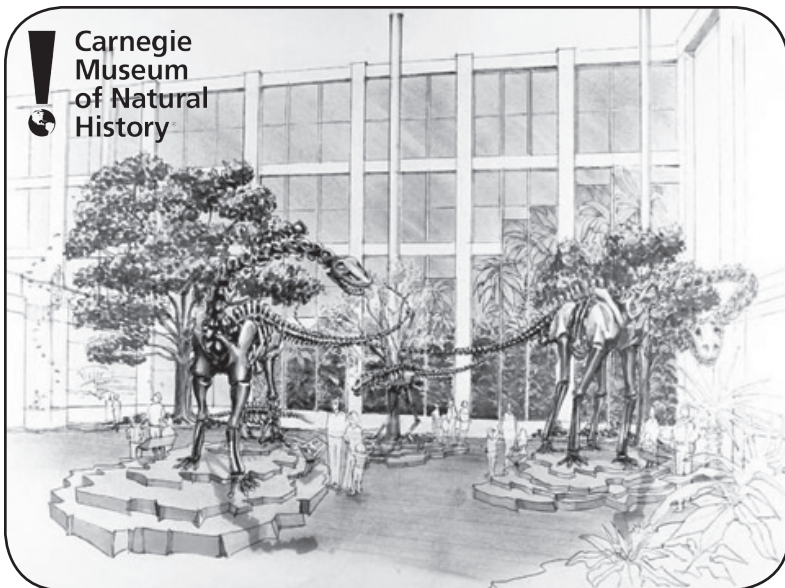
2. Read a book about fossils or a fossilized creature (see attached list) and incorporate the following vocabulary words into a conversation about the book.

Vocabulary

- + **Carnivore:** an animal that eats meat. A carnivore may be a predator and/or a scavenger.
- + **Cenozoic Era:** the time period since 65 million years ago, including today. It is commonly called the Age of Mammals.
- + **Dinosaur:** a reptile with particular skeletal features that define the group. Birds are now considered to be a group within the dinosaurs. Because of the birds, we cannot say that dinosaurs are extinct. We can say that non-bird dinosaurs are extinct. All non-bird dinosaurs lived on land, 225–65 million years ago.
- + **Evolution:** change through time. All life is constantly changing. Over long spans of time, these changes cause animals to appear very different from the way they looked in the past. Fossils show us a record of these changes over time.
- + **Extinct:** no longer existing on Earth.
- + **Fossil:** anything that shows clues about life more than 10,000 years ago. Fossils may be bones, teeth, eggs, shells, footprints, burrows, leaf impressions, scat, etc.
- + **Herbivore:** an animal that eats plants.
- + **Invertebrate:** an animal without a backbone.
- + **Mammal:** a type of animal that produces mother's milk and has fur.
- + **Mesozoic Era:** the time period between 248 and 65 million years ago. This era is split into the Triassic, Jurassic, and Cretaceous Periods. The Mesozoic is commonly called the Age of Reptiles.
- + **Paleontologist:** a scientist that studies fossils.
- + **Paleozoic Era:** the time period between 543 and 248 million years ago.
- + **Reptile:** a type of animal that lays eggs on land but does not produce milk or have fur.
- + **Vertebrate:** an animal with a backbone (vertebral column). People are vertebrates; clams, insects, worms, and octopi, for example, are not.

Suggested Post-Visit Activities

1. Draw pictures of dinosaurs as living animals (eating, with nests of eggs, and interacting with other types of dinosaurs). Then, draw the sequence of fossilization of the dinosaurs' bones and how paleontologists find them (death, burial, erosion, and discovery).



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- Match pictures of living animals and dinosaur bones to show that they used them in the same way (e.g. crocodile teeth and *Tyrannosaurus rex* teeth, owl claws and *Allosaurus* claws, or giraffe necks and *Brachiosaurus* necks. Mix them up with beaver teeth, mole claws, and flamingo necks for more of a challenge).

Suggested Reading

- Aliki. *Fossils Tell of Long Ago (Let's-Read-and-Find-Out Science 2)*. New York: Crowell, 1990.
- Berger, Melvin and Gilda. *Did Dinosaurs Live in Your Backyard?* New York: Scholastic Books, 1998. Illustrated by Alan Male. (Available as an e-book through Access Pennsylvania.)
- Berkowitz, Jacob. *Jurassic Poop: What Dinosaurs and Others Left Behind*. Toronto: Kids Can Press, 2006. Illustrated by Steve Mach.
- Brown, Charlotte Lewis. *After the Dinosaurs: Mammoths and Fossil Mammals*. New York: HarperCollins, 2006. Illustrated by Phil Wilson.
- Cohen, Daniel. *Allosaurus*. Minkato, MN: Bridgetone Books, 2003. (A good series of books on individual dinosaurs.)
- Esslinger, Jessica. *Discover Dinosaurs Activity Book*. Pittsburgh: Carnegie Museum of Natural History, 1988.
- Pellant, Chris. *Best Book of Fossils, Rocks, and Minerals*. New York: Kingfisher, 2000.
- Prunier, James. *Dinosaurs (First Discovery)*. New York: Scholastic, 1993.
- Thompson, Sharon. *Death Trap: The Story of the La Brea Tar Pits*. Minneapolis, MN: Lerner Publications, 1995.
- Thomson, Ruth. *Dinosaur's Day*. New York: Dorling Kindersley, 2000.
- Wahl, Jan. *The Field Mouse and the Dinosaur Named Sue*. New York: Scholastic, 2000. Illustrated by Bill Doucet.
- Weidner-Zoehfeld, Kathleen. *Dinosaur Parents, Dinosaur Young: Uncovering the Mystery of Dinosaur Families*. New York: Clarion Books, 2001. Paintings by Paul Carrick and Line Drawings by Bruce Shillinglaw. (Available as an e-book through Access Pennsylvania.)
- Wilkes, Angela. *The Big Book of Dinosaurs: A First Book for Young Children*. New York: Dorling Kindersley, 1994.

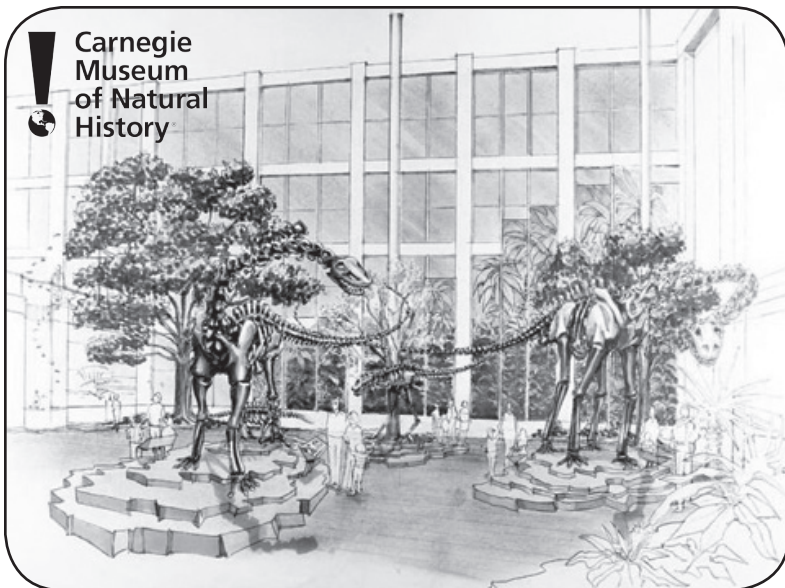
Online Resources

Childrens' Museum of Indianapolis: *Dinosphere: A K–2 Unit of Study*
www.childrensmuseum.org/dinosphere/unitsofstudy/k-2

Southwest Educational Development Laboratory: *Dinosaurs Lesson for Kindergarteners*
www.sedl.org/scimath/pasopartners/dinosaurs

The Learning Page Lesson Plans for Grades K–2

www.learningpage.com/free_pages/menu_wkshts/plans_dino.html



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Museum Resources

Educational Loan Collection

Teachers at registered schools may borrow material for two weeks for a fee of \$50. The entire faculty at a school may borrow indefinitely for the school year when the school pays a fee, based on the size of the school, from \$150–200. For more information or to reserve a loan, call (412) 622-3292.

These thematic kits are available to supplement this tour:

Dinosaurs

Fossils

Online Exhibits

Carnegie Museum of Natural History's Web site is a great source of educational content. Visit our online exhibits page for a complete list of all educational online content:

www.CarnegieMNH.org/exhibits

These online exhibits compliment this tour:

Paleolab

www.CarnegieMNH.org/ditw/paleolab.htm

Carnegie's Dinosaurs

www.CarnegieMNH.org/carnegiesdinosaurs

This is Your Life, Diplodocus carnegii

www.CarnegieMNH.org/carnegiesdinosaurs/dippy