



TEACHER GUIDE

Exploring Dinos

Description

Dinosaurs. They're big! But were they all big? They were green in color ... do we really know that? Many dinosaurs even had feathers! Be a paleontologist as we discover how we know dinosaurs existed, how to tell the difference between dinosaurs and reptiles and how to determine what adaptations these strange and interesting animals had in order to meet their needs. By the way, dinosaurs are in your neighborhood right now! Can you guess what they are?

Objectives

- Recognize the difference between the sprawling legs of a typical reptile and the upright legs of dinosaurs.
- Describe the teeth of meat-eating and plant-eating dinosaurs and how the teeth were used by each.
- Recognize at least 3 types dinosaurs and describe how their special features helped them meet their basic needs.
- Discuss how scientists use fossils to learn more about dinosaurs and the in which they lived.

Ohio's Learning Standards

Kindergarten: Life Science – Physical and Behavioral Traits of Living Things

- Living things are different from non-living things.
- Living things have physical traits and behaviors, which influence their survival.

Grade 1: Life Science – Basic Needs of Living Things

- Living things have basic needs, which are met by obtaining materials from the physical environment.
- Living things can survive only in environments that meet their needs.

Grade 2: Life Science – Interactions within Habitats

- Living things cause changes on Earth
- Some kinds of individuals that once lived on Earth have completely disappeared although they were something like others that are alive today.



- Introduce the vocabulary and additional resources provided below.
- If your students are joining us from a classroom computer, please arrange your room and projection screen so everyone can see us clearly.
- If you and your students are joining us from your homes, we will have an educator monitoring the Chat feature for questions. We request that you or another staff member serve as Co-Host to help monitor students for any inappropriate Chat or camera behavior.
- If you will have a hybrid class (some at school, some joining from home), our educator will monitor the Chat and camera behavior, and we reserve the right to temporarily move any disruptive students to our Waiting Room so we or school staff can correct the undesired behavior.
- If you prefer, we can turn off all cameras and interact solely via the Chat feature.

Vocabulary

birds (avian dinosaurs) – the direct descendants of two-legged, meat-eating dinosaurs. Birds have feathers, are warm-blooded and lay hard-shelled eggs

carnivore – a meat-eating animal. Carnivore teeth are all sharp and pointed.

camouflage – to blend in or look like the surrounding area

dinosaur - a prehistoric reptile with upright legs that lived during the Mesozoic era

fossil – traces or remains of plants and animals that lived in prehistoric times

extinct - animals or plants that don't exist anymore since their needs were not met

herbivore – a plant-eating animal. Herbivorous animals have teeth that tend to be flat or rounded.

mammal - an animal that has hair or fur, generally gives live birth and produces milk to feed its young.

paleontologist – the scientist that studies fossils

prehistoric – living more than 5000 years ago

reptile - an animal that has scales, breathes air with lungs and generally lays eggs

skeleton - the complete set of bones that some animals have inside their bodies

skull - head bones

Extension Activities

- 1 Time is a complex subject, even for scientists. Most 5, 6 and 7 year-olds cannot grasp the difference between 65 million years ago (the time of the dinosaur extinctions), 225 million years ago (the earliest dinosaur fossils), and 3.5 billion years ago (the earliest evidence of life on earth). They can understand, though, that dinosaurs were not the first creatures



alive. There were many, many animals before the dinosaurs, including some things still alive, such as spiders, millipedes and sharks. Many animals lived after the dinosaurs too, including giant birds, woolly mammoths and saber-tooth cats. Investigate time: *How long does it take to sing a song? ... to draw a picture? ... to grow a plant from seed? ... to build a house? How old is each student? ... their parents? ... their grandparents? The United States of America?* Make a time line out of yarn or ribbon.

2. Usually the only parts of an animal that become fossils are the hard parts. The soft parts decay and disappear - so from dinosaurs we find bones and teeth, from snails, their shells. We can also sometimes find things like eggs and footprints.
 - Clean off some chicken bones by boiling them. Pour plaster about ½ inch deep in the bottom of milk cartons or small boxes. Allow children to press bones into the soft plaster to "create" a skeleton. Before plaster gets too hard sprinkle sand over it to create a "rocky" look.
 - Similarly allow children to press their hands, a clean chicken bone, clam shells or other natural objects into clay to make impressions.
 - If children have gravel driveways at their homes, the gray limestone rock often used usually contains fossils. Look for the imprints of small shells.
3. Teeth tell us what an animal eats. Sharp, pointed teeth are for meat-eaters. Flat, chewing teeth are for plant-eaters. It is very important for plant-eaters to chew their food before they swallow it to help the stomach get all the nutrients out of the food. Look for pictures of animals in books, magazines or on-line and notice the shapes of the teeth. What kind of teeth do humans have? How do we use our front teeth? How do we use our back teeth? What about animals that don't have teeth? How do those animals eat?
4. How *big* is a dinosaur? Does *big* mean long? ... tall?... or heavy? Measure a length of string to equal the length of a dinosaur. Have the class stretch it out to see the size of a giant dinosaur. If the students all hold hands and stretch out in a long line would the class be as long as one of the big dinosaurs? The longest know dinosaur is *Seismosaurus* which may have been 120-140 feet long. *Ultrasaurus* may have stood up to 55 feet tall. How many students would have to stand on top of each other to get that high? *Seismosaurus* and *Ultrasaurus* may have weighed up to 100 tons (200,000 pounds) each. How many students would it take to weigh that much? Don't forget how *small* some dinosaurs were too. Children may be taller or weigh more than some of the smaller species.
5. Draw a picture or write a story describing how you would live in a world with dinosaurs. We don't know what color(s) dinosaurs were, but not all of them may have been green or gray. Try a variety of colors. Fossil evidence shows that many types of dinosaurs had feathers!



Online Resources for Teachers and Students

Click the link below to find additional online resources. These websites are recommended by our Museum Educators and provide additional content information.

CMNH Educators regularly review these links for quality. Web addresses often change so please notify us if any links have issues. Please note that aside from our own Museum website, the Museum is not affiliated with and does not endorse these online resources.

Cleveland Museum of Natural History <https://cmnh.org/edlinks>

Educator Resource Center (ERC)



Educator Resource Center
CLEVELAND MUSEUM OF NATURAL HISTORY
Celebrating 30 years of supporting science education

The Educator Resource Center is dedicated to providing teachers with the classroom resources and professional development they need to create dynamic, enriching, and inquiry-based experiences for their students.

Contact the ERC at 216-231-2075 for information on individual or school membership and/or to schedule an appointment to borrow materials.

Visit the ERC website for more information on workshops <https://www.cmnh.org/educator-workshops>

ERC Hours

- By Appointment Only Curbside or Browsing Appointments
- **Wed, Thurs & Fri 2 pm to 5 pm**
- Call or email (erc@cmnh.org) to schedule an appointment
- Closed major holidays & some Professional Development days.

Materials for Loan

With close to 100 dioramas and over 130 thematic teaching kits, our lending library has the materials you need to make science come alive for your students.

If you're interested in additional resources be sure to browse our lending library collection at <https://cmnherc.myturn.com/library/>



Educator Professional Development

Get connected to trending teaching methods, best practices in science education, and hot topics in current scientific research.

To learn more visit <https://www.cmnh.org/learn/educator-resource-center/educator-workshops>

Email inquiries to erc@cmnh.org or call 216-231-2075 to speak with an ERC staff member.

