SNOMNH

Dinosaur Eggs and Babies

Teacher Guide

Grade Levels: Age 4 — Kindergarten

Program overview

The program is centered on an original story "Are You Our Mother," about two Tenontosaurus hatchlings. The different dinosaur characters in the story are discussed prior to reading the story. These dinosaurs are: triceratops, stegosaurus, tyrannosaurus, and oviraptor. Following the story, the museum educator will lead the students in two experiments with eggs and then conclude the program with a dinosaur hunt.

P.A.S.S.

Pre-Kindergarten
Science Process – 1.1, 1.3, 1.4
Physical Science – 2.1
Life Science – 3.1, 3.2

Kindergarten
Science Process – 1.1, 1.2, 1.3
Physical Science – 1.1
Life Science – 2.1, 2.2

Objectives/Student Learning Outcomes

After participating in this program, students will be able to:

- Identify five different dinosaurs.
- Explain several ways that an egg protects the baby inside.
- Realize that our understanding of dinosaurs is based on evidence.

Background

During the last decade, much information has come to light about dinosaur parental behavior. While data does not exist for all dinosaurs, we do have good evidence that Maiasaura and Oviraptor, for example, took care of their eggs and, possibly, hatchlings. Additional evidence on parental care has come from the discovery by the SNOMNH paleontologists of a site where a mixed group of adult and juvenile Tenontosaurus were found. This site has been interpreted as evidence that Tenontosaurus took care of their young.

VOCABULARY

Fossil: evidence of past life. A part or imprint of a plant or animal that has been preserved in rock or amber.

Dinosaur: the dominant land-living, egg-laying animal of the Mesozoic (248-65 million years ago). The dinosaurs nearest living relatives are crocodiles and birds.

Meat-eater: an animal that lives by eating other animals.

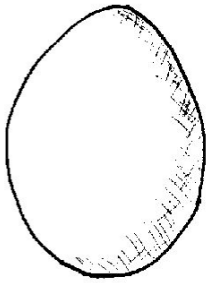
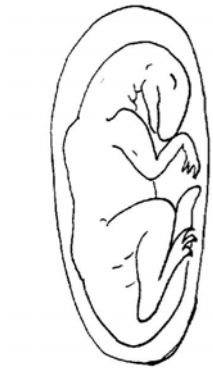
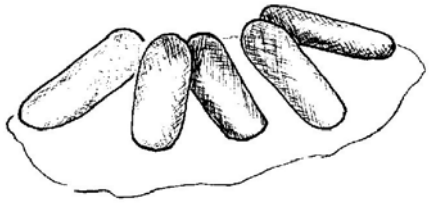
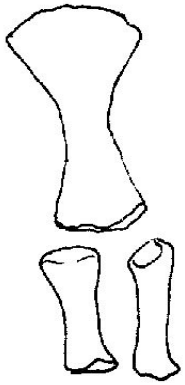
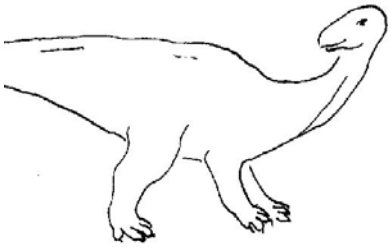
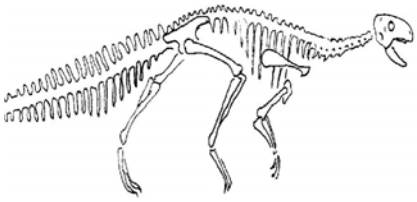
Plant-eater: an animal that lives by eating plants.

At the Museum

Be sure to see the display on dinosaur babies in the Hall of Ancient Life. The children can touch a cast of a fossil nest and open an "egg" to see the dinosaur embryo inside. For purposes of display the eggs in the nest are shown on their sides, rather than upright, the way they were found.

Exhibit Bingo

Directions: Cross out each square after you find the object.

 Largest known egg (elephant bird)	 Baby Oviraptor	 Oviraptor Nest
 Leg bones of young Allosaurus	 Mother Tenontosaurus	 Baby Tenontosaurus

Supplementary/Enrichment Activities

Science

1. Observe an egg "breathing"

Dinosaur eggs are surprisingly small, considering the large size of an adult dinosaur. Part of the reason for this size difference is that there is a limit to how large any egg can get because the egg must "breath." In other words, carbon dioxide and other wastes must leave the egg and fresh oxygen must enter the egg through pores (small holes) in the shell. You can help you students watch an egg breath by doing this experiment.

You will need:
- A clear glass or jar that will safely hold hot water
- Fresh egg

Procedure:
1. Heat the water
2. Put the fresh egg in the glass container
3. Pour the hot water over the egg.
4. Watch what happens.

As the air inside the egg heats up it expands then escapes through pores in the eggshell. Watch and you can see bubbles form on the surface of the egg then float up through the water.

If the egg was very large it would have a large volume in comparison to a relatively small surface area. In a very large egg there would not be enough surface area for gas exchange and the animal inside would die. No egg can be larger than about the size of a basketball, even if the mother dinosaur is large enough to fill a classroom!

Additional Resources

Early Elementary

Dinosaurs, by Angela Royston. Dorling Kindersley, 1991

A Dinosaur Named After Me, by Bernard Most. Harcourt Brace Jovanovich, 1991

How Big Were the Dinosaurs? Bernard Most. Harcourt Brace, 1994

Dinosaur for A Day, by Jim Murphy. Scholastic, 1992

Giant Dinosaurs, by Erna Rowe. Scholastic 1973

For Teachers

The Illustrated Encyclopedia of Dinosaurs, by Dr. David Norman. Color restorations by John Sibbick. Crescent Books, New York, 1985

Investigating Science with Dinosaurs, by Craig A. Munsart. Teacher Idea Press, 1993

Janice Van Cleave's Dinosaurs for Every Kid, by Janice Van Cleave. John Wiley and Sons, 1994

The Ultimate Dinosaur Book, by David Lambert. Dorling Kindersley, New York 1993

Dinosaur Eggs, National Geographic Magazine, May 1996