

Lesson Plan

Studying Fossils, Finding Facts

Book: *Tyrannosaurus Rex*

Series: Finding Dinosaurs

Level: Navigator

Objective

To help students learn about the various methods used by paleontologists to study fossils and the information these methods have helped them learn, summarizing each process and its results in their own words.

Supplies

- *Tyrannosaurus Rex* book
- Whiteboard
- Paper and pencils

Before the Activity

Read through the *Tyrannosaurus Rex* book, or assign it to students to read on their own.

Activity

Scientists have many methods and techniques for studying dinosaurs. Write the following five terms on the whiteboard:

1. Footprints
2. Bone rings
3. Coprolites
4. CT scans
5. Computer models

Ask students to use the information from the *Tyrannosaurus Rex* book to write a short paragraph (three to five sentences) about each of the five methods. The paragraph about each method should answer two questions:

- What part of a *Tyrannosaurus rex*'s body or life does this method allow scientists to study?
- What have scientists learned about *Tyrannosaurus rex* as a result?

Evaluation

Using the attached answer key, give students one point for answering each question about each of the five methods, for a total of up to 10 points.

Standards

This lesson may be used to address the Common Core State Standards' reading informational texts standards, grade 4 (RI 4.3) and writing standards, grade 4 (W 4.2).

Answer Key

1. Footprints

Studying footprints helps scientists learn about how *Tyrannosaurus rex* lived. In 2014, scientists found a pattern of footprints that showed three dinosaurs walking together. As a result, scientists learned that *Tyrannosaurus rex* lived in groups. The dinosaur may even have hunted in packs. (pp. 22–23)

2. Bone rings

Bone rings allow scientists to learn how old a *Tyrannosaurus rex* was when it died. They slice through a bone and use a microscope to count the rings. Each ring represents one year of growth. Scientists used this method to learn that Sue was 28 years old when it died. This makes it the oldest known *Tyrannosaurus rex*. (p. 22)

3. Coprolites

By studying coprolites, scientists can learn what *Tyrannosaurus rex* ate. Coprolites are fossilized dung. They contain fragments of bones. Studying these bones can show what the dinosaur ate. It also helps scientists learn about how *Tyrannosaurus rex* digested its food. (p. 22)

4. CT scans

Scientists use CT scans to study *Tyrannosaurus rex* skulls and learn about the animal's brain. In a CT scan, a computer uses X-rays to produce a 3D image. This image shows what the inside of the body looks like. Because of CT scans, scientists know that the area devoted to detecting smells was one of the larger parts of *Tyrannosaurus rex*'s brain. This means *Tyrannosaurus rex* likely had a strong sense of smell, which would have helped it find prey. They also learned that the structure of its inner ear shows *Tyrannosaurus rex* had excellent hearing. (p. 17)

5. Computer models

Scientists used computer models to study *Tyrannosaurus rex*'s jaws and learn about its bite. The models showed them that a *Tyrannosaurus rex*'s jaws were powerful enough shatter bones. In addition, they learned that its bite was twice as strong as the bite of a crocodile. (p. 13)