

When Dinosaurs Roamed America's National Parks

Teacher's Guide

Grade Level: K-8

Curriculum Focus: Life

Lesson Duration: 1-2 class periods

Program Description

Take a tour through the Triassic, Jurassic, and Cretaceous periods to learn about the species of dinosaurs that once roamed the Earth, and see the evidence of the reptilian creatures that has been found, studied, and preserved in national parks across America.

Discussion Questions

- Describe the Earth when dinosaurs lived.
 - What evidence exists that dinosaurs once roamed the area known today as America?
 - Describe life during the Triassic, Jurassic, and Cretaceous geologic time periods.
 - Why did dinosaurs become extinct?
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Video Index

Segment 1: Dawn of the Dinosaurs

Description

Creatures much bigger than bison and bears once roamed the lands that now make up many of America's national parks. See how dinosaurs emerged to rule Earth for millions of years.

Pre-viewing question

Q: What is the name given to Earth's prehistoric supercontinent?

A: Pangaea

Post-viewing question

Q: What was the Permian extinction?

A: A cataclysmic event occurred about 250 million years ago, during the Permian period, that wiped out almost all marine life and most land species.

Segment 2: Triassic Period

Description

As Earth recovered from the Permian extinction, new creatures began to dominate their environments. Learn more about the earliest dinosaurs.

Pre-viewing question

Q: What three geologic periods make up the Age of Dinosaurs?

A: Triassic, Jurassic, and Cretaceous

Post-viewing question

Q: Where in North America did many dinosaurs live?

A: While dinosaurs lived in most of North America, fossil evidence shows that many lived the dry flatlands that stretched from Canada to Mexico and from Nebraska to Idaho.

Segment 3: Jurassic Period

Description

Earth was home to the largest of the dinosaur species for 70 million years. Follow in their footsteps as they fight for survival.

Pre-viewing question

Q: What was one difference between dinosaurs from the Triassic and Jurassic periods?

A: Dinosaurs living in the Jurassic period were generally larger.

Post-viewing question

Q: How long did the Jurassic period last?

A: About 70 million years

Segment 4: Cretaceous Period

Description

After millions of years on Earth, the dinosaurs disappeared at the end of the Cretaceous period. Explore some of the possible solutions to one of science's greatest mysteries.

Pre-viewing question

Q: What are some theories for the extinction of dinosaurs?

A: Answers will vary, but the prevailing scientific theory is that an asteroid struck Earth, causing a massive dust cloud that blocked the sun for a prolonged period of time.

Post-viewing question

Q: What made *Tyrannosaurus rex* such a deadly predator?

A: The *Tyrannosaurus rex* was large (up to 12.5 meters long and 6 meters tall); its jaws were more than a meter long with up to 60 very sharp, replaceable teeth; its eyes looked forward; and its acute sense of smell helped it find prey easily.



Lesson Plan

Student Objectives

- Understand the importance of preserving archeological evidence of the past.
- Understand that Earth has changed over time.
- Describe the animals and environments of the Triassic, Jurassic, and Cretaceous time periods.
- Compare the Triassic, Jurassic, and Cretaceous time periods.

Materials

- *When Dinosaurs Roamed America* video and VCR, or DVD and DVD player
- Paper, pencils, and rulers
- White construction paper, 1 sheet per student
- Crayons, markers, or colored pencils
- Print resources with information on the Triassic, Jurassic, and Cretaceous time periods
- Computer with Internet access (optional)

Procedures

1. Introduce the Triassic, Jurassic, and Cretaceous time periods by showing *When Dinosaurs Roamed America's National Parks*. Talk about the dinosaurs that lived during each time period. Discuss the evidence studied that has provided information about them. Talk about the importance of preserving such evidence of Earth's past.
2. Tell students that they will research the three geologic time periods and make a chart comparing them.
3. Have students use print resources and the Internet to research the following information for each period:
 - How and when the period began
 - How and when the period ended
 - Most prevalent dinosaur species
 - Description of the vegetation and environment
 - Two interesting facts about the period
 - Picture of a common dinosaur

Allow students time in class and as homework to conduct research. Have them visit the following Web sites:

- <http://dsc.discovery.com/convergence/dinos/dinos.html>
- <http://yahooligans.yahoo.com/content/science/dinosaurs/>



- <http://www.palaeos.com/Mesozoic/Mesozoic.htm>
 - <http://www.cotf.edu/ete/modules/msese/dinosaur.html>
4. Have students fold their construction paper into three equal columns, labeled Triassic, Jurassic, and Cretaceous. Next have them create six rows labeled as follows: Period Begins, Period Ends, Dinosaurs, Vegetation, Facts, and Illustration. Tell students to fill in the information they gathered from their research.
 5. Based on the students' research, talk about the three geologic periods, including similarities and differences. Discuss evidence that supports theories of how each period ended. Ask students about the importance of preserving evidence linked to Earth's past? How do national parks help preserve fossil records and other evidence of dinosaurs?
 6. Display the charts in the classroom so that students can view them during their free time.

Assessment

Use the following three-point rubric to evaluate students' work during this lesson.

- **3 points:** Students were highly engaged in class discussions; thoroughly researched three geological periods; created coherent, legible charts that correctly addressed the necessary criteria; and demonstrated a competent understanding of the importance of preserving evidence from Earth's past.
- **2 points:** Students were mostly engaged in class discussions; adequately researched three geological periods; created coherent, legible charts that correctly addressed most of the necessary criteria; and demonstrated a basic understanding of the importance of preserving evidence from Earth's past.
- **1 point:** Students did not engage in class discussions; did not research three geological periods or were unable to do research without direct teacher supervision; created incoherent, illegible charts that addressed little or none of the necessary criteria; and were unable to demonstrate a basic understanding of the importance of preserving evidence from Earth's past.

Vocabulary

carnivore

Definition: A flesh-eating animal

Context: The long slender jaw and sharp flattened teeth indicate that coelophysis was a carnivore.

extinction

Definition: The process or act of making extinct; no longer living

Context: We can look at the mass extinction of dinosaurs and learn a valuable lesson; preservation of our lands and resources isn't just a good idea, it is vital for survival.



fossil

Definition: A remnant or trace of an organism from a past geologic age, such as a skeleton or leaf imprint, embedded and preserved in the Earth's crust

Context: You can learn a lot about the history of dinosaurs by examining clues contained in fossil records.

geologic time

Definition: The scale used to measure periods at which a definite event occurred or particular durations in Earth's past

Context: Dinosaurs evolved over three periods of geologic time: Triassic, Jurassic, and Cretaceous.

predator

Definition: An organism that lives by preying on other organisms

Context: Only the worthiest predator could take advantage of *Desmatosuchus*, which had hard spikes on its shoulders and grew as long as 16 feet.

species

Definition: A fundamental category of taxonomic classification, ranking below a genus or subgenus and consisting of related organisms capable of interbreeding

Context: During the Triassic period, reptiles evolved into a wide variety of species of all shapes and sizes.

strata

Definition: Beds or layers of sedimentary rock having approximately the same composition throughout

Context: We can get a good idea of different environments over time by looking at changes in rock strata.

Academic Standards

Mid-continent Research for Education and Learning (McREL)

McREL's Content Knowledge: A Compendium of Standards and Benchmarks for K-12 Education addresses 14 content areas. To view the standards and benchmarks, visit <http://www.mcrel.org/compendium/browse.asp>.

This lesson plan addresses the following national standards:

- Historical Understanding: Understands the historical perspective
- Life Sciences: Understands biological evolution and the diversity of life



- Earth and Space Sciences: Understands Earth's composition and structure; Understands atmospheric processes and the water cycle
- Language Arts – Viewing: Uses viewing skills and strategies to understand and interpret visual media; Writing: Uses the general skills and strategies of the writing process, Gathers and uses information for research purposes; Reading: Uses reading skills and strategies to understand and interpret a variety of informational texts

The National Council for the Social Studies (NCSS)

NCSS has developed national guidelines for teaching social studies. To become a member of NCSS, or to view the standards online, go to The National Council for the Social Studies (NCSS) has developed national standards to provide guidelines for teaching social studies. To view the standards online, go to <http://www.socialstudies.org/standards/strands/>.

This lesson plan addresses the following strands:

- Time, Continuity, and Change
- Culture
- People, Places, and Environments

National Academy of Sciences

The National Academy of Sciences provides guidelines for teaching science in grades K-12 to promote scientific literacy. To view the standards, visit this Web site: <http://books.nap.edu/html/nses/html/overview.html#content>.

This lesson plan addresses the following national standards:

- Earth and Space Science: Earth's history; Origin and evolution of the earth system
- Life Science: Biological evolution; Behavior of organisms
- History and Nature of Science: Science as a human endeavor; Nature of scientific knowledge
- Science in Personal and Social Perspectives: Natural hazards; Changes in environments

Support Materials

Develop custom worksheets, educational puzzles, online quizzes, and more with the free teaching tools offered on the Discoveryschool.com Web site. Create and print support materials, or save them to a Custom Classroom account for future use. To learn more, visit

- <http://school.discovery.com/teachingtools/teachingtools.html>
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