

Assignment Discovery Online Curriculum

Lesson title:

Mesozoic Murals

Grade level:

6-8, with an adaptation for older students

Subject area:

Life Science

Duration:

Two class periods

Objectives:

Students will

1. learn which dinosaurs lived during each period of the Mesozoic era; and
2. discover how dinosaurs from each period of the Mesozoic era adapted to their unique environment.

Materials:

- Pens, pencils, and markers
- Crayons and paints
- Index cards
- Large sheets of paper
- Tape or glue
- Books and magazines about dinosaurs
- Computer with Internet access (optional but very helpful)
- Copies of the Classroom Activity Sheet: Dinosaur Profile
- Copies of the Take-Home Activity Sheet: Dinosaur Drawing

Procedures:

1. Explain to students that anatomically modern humans (or humans as we know them today) have been on Earth for about 80,000 years. In light of modern history, this may seem like a long time, but it is a relatively short time considering that dinosaurs roamed Earth millions of years earlier. Dinosaurs lived during the Mesozoic era, which lasted from about 250 million to 63 million years ago. Dinosaurs first emerged and thrived in that era, so it is sometimes called the Age of Dinosaurs.
2. Explain to students that not all dinosaurs lived at the same time. Like all animals, dinosaurs adapted as their environment changed, or they became extinct.
3. Review the three periods of the Mesozoic era with the class. Draw a time line on the board or on a large piece of paper:

The earliest period is the *Triassic*, which began around 248 million years ago and lasted about 35 million years. During the Triassic, Earth's climate ranged from hot to mild, and there were many inland deserts. The Triassic ended with a mass extinction of many plants and animals.

The middle period is called the *Jurassic*. It began around 213 million years ago and lasted for about 69 million years. The climate on Earth was warm and damp, and there were many active volcanoes. The Jurassic is known for its wide variety of dinosaur species.

The third period is the *Cretaceous*. It began around 144 million years ago and lasted for about 79 million years. The period experienced a warm and mild climate. During this time Earth's first flowers and trees appeared. Dinosaurs with horns and armor dominated the landscape. The Cretaceous also ended with a mass extinction, which some scientists believe wiped out the dinosaurs and many other species.

4. Explain that students will work in groups to conduct research on dinosaurs from each of the three Mesozoic periods. They will use their research to create a Mesozoic mural.
5. Divide the class into three groups and assign each group a Mesozoic period. Then have each student select a dinosaur from his or her group's period. It is a good idea to have print resources on hand, but students can find the information they need at the Web site <http://www.enchantedlearning.com/subjects/dinosaurs>.

Triassic dinosaurs: *Plateosaurus*, *Lesothosaurus*, *Saltopus*, *Massospondylus*, *Anchisaurus*, *Coelophysis*, *Dilophosaurus*, *Eoraptor*, *Herrerasaurus*, *Mussaurus*, *Riojasaurus*

Jurassic dinosaurs: *Heterodontosaurus*, *Lesothosaurus*, *Syntarus*, *Vulcanodon*, *Meglosaurus*, *Dilophosaurus*, *Xiaosaurus*, *Brachiosaurus*, *Ceratosaurus*, *Dryosaurus*, *Janenschia*, *Kentrosaurus*, *Yangchuanosaurus*, *Camarasaurus*, *Camptosaurus*, *Compsognathus*, *Allosaurus*, *Aptosaurus*, *Diplodocus*, *Ornitholestes*, *Stegosaurus*, *Supersaurus*

Cretaceous dinosaurs: *Iguanadon*, *Psittacosaurus*, *Hylaeosaurus*, *Utahraptor*, *Armargasaurus*, *Carcharodontosaurus*, *Ouranosaurus*, *Spinosaurus*, *Leaellynasaura*, *Minmi*, *Muttaburrasaurus*, *Acanthopholis*, *Baryonyx*, *Hypdilophodon*, *Deinychus antirrhopus*, *Microvenator*, *Sauropelta*, *Gigantosaurus*, *Gallimimus*, *Oviraptor*, *Proceratops*, *Saurolophus*, *Tyrannosaurus rex*, *Velociraptor*, *Thescelosaurus*, *Anatotitan*, *Albertosaurus*, *Ankylosaurus*, *Corythosaurus*, *Edmontosaurus*, *Euoplocephalus*, *Lambeosaurus*, *Maiasaura*, *Monoclonius*, *Montanoceraptor*, *Ornithomimus*, *Pachycephalosaurus*, *Parasaurolophus*, *Styracosaurus*, *Triceratops*

6. Distribute the Classroom Activity Sheet: Dinosaur Profile. Have students use it as a guide as they research dinosaurs. Give students time in class to complete their research.
7. Assign the Take-Home Activity Sheet: Dinosaur Drawing. Tell students to draw their dinosaurs to the following scale: 1/4 inch = 1 foot. (For example, a 4-foot-tall dinosaur would be drawn 1 inch tall, and a 40-foot dinosaur would be drawn 10 inches tall.)
8. During the next class period, have the groups meet to discuss and plan their murals. Tell them to consider the habitats of the dinosaurs they were assigned. Do the dinosaurs live in swamps, coniferous forests, or deserts? Then have each group use a large sheet of paper to create a group mural. Have students draw and label the plants (trees are plants) and other environmental features.
9. After the murals of habitats have been completed, have students cut out their dinosaur pictures and place them in the appropriate environment on the mural, such as near plants or animals the dinosaurs ate. Using information on the Classroom Activity Sheets, each student should write a brief description of a dinosaur on an index card. Students should tape their cards next to their pictures.
10. Hang the murals around the classroom. Once students have had a chance to view all the murals, ask the class how the Mesozoic periods were alike and how they were different. How did dinosaurs change as their environment and its vegetation changed?

Adaptation for older students

Have each student choose a Mesozoic period. Have each student research at least three dinosaurs and create a mural. Give students time in class to present their murals.

Discussion Questions:

1. Summarize the three periods of the Mesozoic era. What were characteristics of each time period? How were they similar? How were they different?
2. Were the dinosaurs in any one Mesozoic period larger, smaller, or more agile than dinosaurs in other Mesozoic periods? Did each period have equally diverse populations of dinosaur species? Give examples to support your ideas.
3. How do we know about dinosaurs? Where does our information come from?
4. What physical characteristics do dinosaurs have in common? What characteristics vary among dinosaurs?

5. How do dinosaurs' bodies reflect their food? Pay particular attention to their necks, mouths, and teeth.
6. What kinds of defense did dinosaurs use for protection against predators? Give at least two examples.

Evaluation:

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

Three points: completed the Classroom Activity Sheet, transferred research to index cards, and created a scale drawing of a dinosaur; worked cooperatively to draw habitats and place dinosaurs correctly; participated actively in the final discussion about dinosaurs.

Two points: completed most of the Classroom Activity Sheet, transferred most key points to index cards, and created a drawing of a dinosaur not quite to scale; worked cooperatively to draw plants and place dinosaurs in nearly the correct spot; participated somewhat in the final discussion about dinosaurs.

One point: completed some of the Classroom Activity Sheet, transferred some key points to index cards, but did not complete a drawing of a dinosaur, which was not drawn to scale; worked somewhat cooperatively to draw plants, but the pictures of dinosaurs were not all completed or placed correctly; did not participate in the final discussion about dinosaurs.

Extension:

Theories of Extinction

Dinosaurs lived for about 100 million years, but all that remains are fossilized bones and footprints. Encourage students to research the different theories about the extinction of the dinosaurs. Have them present several theories and give their opinion about which they think is the most plausible. The following Web sites have useful information:

<http://www.ucmp.berkeley.edu/diapsids/extincttheory.html>

<http://www.bbc.co.uk/education/darwin/exfiles/index.htm>

Suggested Reading:

The Scientific American Book of Dinosaurs

Gregory S. Paul, ed. St. Martin's Press, 2000

With each chapter written by a dinosaur specialist, this comprehensive volume explains everything about dinosaurs: their anatomy, evolution, behavior, growth, and development, along with several theories of their mass extinction. Black-and-white drawings, photographs, and artistic reconstructions add to the detailed text. A section of colored plates shows how perceptions of dinosaurs' appearance and movement have changed throughout the past century.

The Handy Dinosaur Answer Book

Thomas E. Svarney and Patricia Barnes-Svarney. Visible Ink Press, 1999

On a lighter note, this book answers all the questions you can think of about dinosaurs. Three sections cover the three major periods of dinosaur existence—the Triassic, Jurassic, and Cretaceous. Other sections answer questions about dinosaur anatomy, behavior and extinction, as well as dinosaur discoveries in North America and around the world. The last sections include a listing of books, organizations, museums and Web sites.

Vocabulary:

adapt

Definition: To adjust to particular conditions.

Context: Animals that survive have successfully **adapted** to a changing environment.

extinction

Definition: The total disappearance of a species so that it no longer exists.

Context: The giant panda and many other animals are so few in number that scientists fear that the animals face **extinction**.

habitat

Definition: The place a plant or animal species naturally lives and grows.

Context: An animal's natural **habitat** is the area in which it can find enough food and water to survive.

predator

Definition: An animal that hunts other animals for food.

Context: A hawk's strong claws, sharp beak, and keen eyesight make it a fierce **predator**.

Academic standards:

Grade level:

6-8

Subject area:

Life Science

Standard:

Understands relationships among organisms and their physical environment.

Benchmark:

Knows that all individuals of a species that exist together at a given place and time make up a population, and all populations living together and the physical factors with which they interact compose an ecosystem.

Grade level:

6-8

Subject area:

Life Science

Standard:

Understands biological evolution and the diversity of life.

Benchmark:

Knows that the fossil record, through geologic evidence, documents the appearance, diversification, and extinction of many life-forms.

Credit

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Dinosaur Profile

Name of dinosaur

Does the dinosaur's scientific name have a translation? If so, what is it?

Dinosaur's scientific name:

Translation (if available):

Appearance

Dinosaur length:

Dinosaur height:

Describe its physical features. (How large is its mouth? What are the teeth like? Does it walk on two legs or four? How does its physical structure help it survive? For example, dinosaurs with long necks can reach leaves at the tops of trees.)

Habitat

Where did the dinosaur live?

In what type of environment did it live? (swamp, desert, grassland, or forest)

Diet

Did the dinosaur eat meat, plants, or both?

Behavior

Did the dinosaur live alone or in herds?

Did it sit on a nest of eggs or leave them to hatch alone?

Fun facts

Share any interesting facts you discovered about this dinosaur.

Dinosaur Drawing

Find a picture of the dinosaur in a book or on a Web site.

Draw an accurate picture of it below using the following scale: 1/4 inch equals 1 foot. For example, if the dinosaur was 20 feet long, you would draw it 5 inches long. (Hint: Divide the length of the dinosaur by 4; thus a 20-foot dinosaur is 5 inches. [$20 \div 4 = 5$])

