

Woolly Mammoth

Lesson Overview

From fossils, we can learn many things about extinct organisms. For example, by analyzing an organism's physical attributes, we can make reasonable predictions about its diet and its adaptations to live in certain environments. In this lesson, students will analyze the fossils and physical attributes of the Woolly Mammoth.

Objectives

- Use fossil data to provide evidence of an organism's existence
- Analyze an organism's physical attributes to learn about its diet and the environment that it lived in
- Compare and contrast the physical attributes of an extinct organism with its most recent descendant

Standards (NGSS and Common Core)

For state specific standards visit edu.zspace.com/activities

Next Generation Science Standards

- Life Science – Biological Evolution
 - 3-LS4-1 Analyze and interpret data from fossils to provide evidence of the organisms and the environments in which they lived long ago.

Common Core Connections

- Language Arts
 - RI.3.1 Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.
 - RI.3.3 Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect.
 - W.3.8 Describe the logical connection between particular sentences and paragraphs in a text (e.g., comparison, cause/effect, first/second/third in a sequence).

Differentiation

- Group students heterogeneously to allow students with a strong command of the English language to assist in reading or interpreting questions
- Provide paper copies of diagrams to students to use as a reference
- Provide a handout with a list of vocabulary terms and definitions that will appear in their activity
- Allow students to provide answers that are handwritten, typed, or verbal
- Enrichment: Students could research similar topics and create presentations

Grade Level: 2nd - 4th

Lesson Time: 90 Minutes

Key Terms:

Adaptations
Environment
Evolution
Fossils
Paleontology
Physical attributes

Resources:

Answer Key
Woolly Mammoth vs.
African Elephant
worksheet

Materials needed:

Research center on
Woolly Mammoths
and African
Elephants

Introduction

Students need a basic knowledge of extinct organisms, fossils, evolution, and adaptations before beginning this lesson. The teacher will explain to the students that they will learn about the Woolly Mammoth, an extinct animal that lived 4,500 years ago. The teacher will give basic information about the Woolly Mammoth. It lived in the frozen tundra during the Ice Age in Africa, Asia, Europe, and North America. The students must take good notes so they can compare the Woolly Mammoth to its modern-day descendant, the African Elephant.

Activity – Woolly Mammoth

1. Open the "Woolly Mammoth" session in Cyber Science 3D.
2. Click on the "Presenter" mode at the top left corner of the screen. This will display a list of slides along the left side.
3. Follow the presentation: Click on the "Play Slides" button to pause the session at the first slide. When you are ready for the next slide, click the next slide on the list. Follow the directions on each slide and explore at your own pace.
4. Using the provided "Woolly Mammoth vs. African Elephant" worksheet, record your observations about the Woolly Mammoth's physical attributes and adaptations in the Woolly Mammoth column.
5. Using textbooks and the Internet, conduct additional research about the Woolly Mammoth and its modern-day descendant, the African Elephant, and record the data on the provided worksheet.
6. Find similarities and differences between the Woolly Mammoth and the African Elephant.
7. Share your findings with the class.

Closing

After the students complete both columns of their worksheets, they will discuss their findings. They will discuss the similarities and differences between the Woolly Mammoth and the African Elephant. They will make conclusions about how the differences in physical attributes helped each animal survive in its own environment.

Questions for Discussion

1. From your research, you found that the Woolly Mammoth and the African Elephant had several different physical attributes, even though they are distant relatives. How can you explain these differences?

Answers will vary. Sample Answer: The Woolly Mammoth had physical attributes and adaptations that helped it survive in a cold environment. The African Elephant has physical attributes and adaptations that help it survive in a hot environment.

2. Why did these changes occur?

Answers will vary. Sample Answer: The Ice Age ended. Over thousands of years, it had to evolve and adapt to its new warmer environment.

3. How do some of the physical attributes of the African Elephant help it to survive in its own environment?

Answers will vary. Sample Answer: The African Elephant doesn't need long hair or a thick layer of fat for warmth. It has very large ears to dissipate heat and to keep it cool.

△Investigate Further

Follow-up Activity: Complete the Tyrannosaurus Rex Activity in Cyber Science 3D.

Extension Activity: Students could choose another prehistoric animal from the Cyber Science 3D program, analyze its physical attributes, and then make predictions about its environment and diet.

Extension Activity: Students could measure the height, length, ear size, and tusk length of the Woolly Mammoth and the African Elephant with chalk on the blacktop and then make comparisons.

Answer Key – Woolly Mammoth

Activity Questions provided in Cyber Science 3D

1. Describe the Woolly Mammoth's hair. Why was it this way?

Answers will vary. Sample Answer: The Woolly Mammoth had very long, thick hair to keep it warm in the cold, frozen tundra.

2. Describe the Woolly Mammoth's ears. In comparison to modern-day elephants, were they big or small? Why were they this way?

Answers will vary. Sample Answer: The Woolly Mammoth had relatively small ears compared to modern-day elephants. Smaller ears allowed them to lose less heat and stay warm.

3. Describe the Woolly Mammoth's skin. Why was it so thick?

Answers will vary. Sample Answer: The Woolly Mammoth had a thick skin, plus a 4-inch layer of fat, to provide extra insulation to keep it warm and to help store nutrients.

4. Describe the Woolly Mammoth's tusks. Why do you think they were so long and curvy?

Answers will vary. Sample Answer: Both males and females had tusks. However, males with extra-long and curvy tusks attracted more females. Tusks were used for defense against enemies like the saber-tooth tigers. Tusks were also used to dig for food.

5. Describe the Woolly Mammoth's teeth. What can you predict about the Woolly Mammoth diet based on the shape of its teeth?

Answers will vary. Sample Answer: The Woolly Mammoth had flat teeth, which is common for herbivores. These teeth were good for grinding up grasses, trees, shrubs, and cacti leaves.

Biological Evolution: Woolly Mammoth vs. African Elephant

Record your research and observations about each animal.

For each body part, describe its physical appearance as well as its function for survival.

	WOOLLY MAMMOTH	AFRICAN ELEPHANT
ENVIRONMENT		
AVERAGE SIZE --HEIGHT --LENGTH --WEIGHT		
HAIR		
SKIN/FAT		
TUSKS		
EARS		
TEETH		
DIET		