

Teacher Guide: Is It a Dinosaur?

Concepts:

- Organisms can be classified into groups based on their shared characteristics.
- Many animals that once lived on Earth are now extinct (including the non-Avian dinosaurs) as a result of large-scale extinction events or climatological changes.

Learning objectives:

- Students will learn that not all fossil animals are dinosaurs (this is a common misconception of students of all ages who visit the museum).
- Students will observe and identify specimens in the museum. They will practice distinguishing dinosaurs from other kinds of extinct animals using visible traits, drawings, and information from museum labels. (Teachers and chaperones should help by pointing out and discussing these sources of evidence.)

TEKS: Grades K-8

Kindergarten: §112.11 (a) 4A, (b) 2A, 3B, 4B, 10A

1st grade: §112.12 (a) 4A, (b) 2A, 3B, 10A

2nd grade: §112.13 (b) 2A, 3B

3rd grade: §112.14 (b) 2A, 3A, 10A

4th grade: §112.15 (b) 2A, 3A, 7C, 10A

5th grade: §112.16 (b) 3A, 7D, 10A

6th grade: §112.18 (a) 4A,E (b) 2A, 3A, 12D

7th grade: §112.19 (a) 4A, E, (b) 2A, 3A, 11A

8th grade: §112.20 (a) 4A, E, (b) 2A, 3A, 11C

Location: Hall of Geology and Paleontology (1st Floor) & Great Hall (2nd Floor)

Time: 15 minutes

Supplies:

- Worksheet
- Pencil
- Clipboard

Vocabulary: *fossil, dinosaur, extinct, extant*

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Pre-Visit:

- This worksheet does not require any pre-visit activities, but giving students an idea of what they will see on their visit to the museum would be helpful. In discussing what they will see, you could emphasize that there will be dinosaurs (young students are often very excited about this!) but that not all the fossils at the museum are dinosaurs.

Post-Visit:

- Have students complete “Are Birds Dinosaurs?” worksheet in small groups and discuss with the whole class. You may want to show pictures of recent fossil finds in China that show evidence of feathers.
- For older students:
 - Conduct a more detailed comparison of the anatomies of dinosaurs and birds, including the names of important bones like the sternum, cranium, and clavicle. Show them pictures of the quill barbs on the bones of a *Velociraptor* skeleton and compare to the barbs on an a turkey’s wing bones (just save your bones from Thanksgiving dinner!).
 - Discuss other fossils, like *Archaeopteryx* that show intermediate stages between reptiles and birds.

Is It a Dinosaur?

Dinosaurs were a type of **reptile** that went extinct a very long time ago. Like reptiles living today, they hatched from **shelled eggs**. Extinct dinosaurs **walked upright** on land; they did not spend their lives swimming in the water or flying in the sky. Some dinosaurs ate meat, and others ate plants. Are the animals below dinosaurs? **Find the fossils of these animals in the museum and observe them carefully, then decide whether they are dinosaurs.**

Quetzalcoatlus
(Texas Pterosaur)



Yes No

Mosasaurus
(Onion Creek Mosasaur)



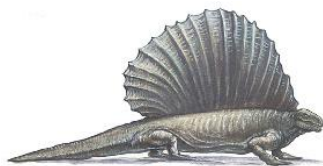
Yes No

Mammuthus
(Columbian Mammoth)



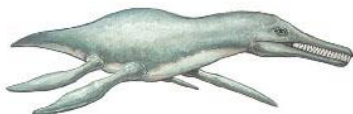
Yes No

Edaphosaurus
(Sailback)



Yes No

Polyptychodon
(Shoal Creek Plesiosaur)



Yes No

Tyrannosaurus



Yes No

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Quetzalcoatlus
(Texas Pterosaur)



Yes No

Explanation: Pterosaurs were flying reptiles, but not dinosaurs. No extinct dinosaurs (non-birds) could fly with skin wings supported by a single finger.

Mosasaurus
(Onion Creek Mosasaur)



Yes No

Explanation: Mosasaurs were aquatic reptiles, but not dinosaurs. No extinct dinosaurs lived in the ocean.

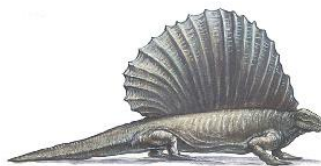
Mammuthus
(Columbian Mammoth)



Yes No

Explanation: Mammoth were mammals, not reptiles – so definitely not dinosaurs. They had fur and gave birth to live young, unlike dinosaurs which had scaly skin (or feathers) and laid eggs.

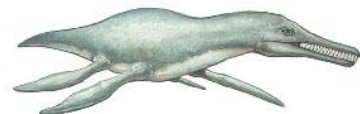
Edaphosaurus
(Sailback)



Yes No

Explanation: Sailbacks clearly walked on sprawling legs rather than upright. Surprisingly, Sailbacks are more closely related to mammals than they are to reptiles. They were not dinosaurs.

Polyptychodon
(Shoal Creek Plesiosaur)



Yes No

Explanation: Plesiosaurs were aquatic reptiles like Mosasaurs, but not dinosaurs.

Tyrannosaurus



Yes No

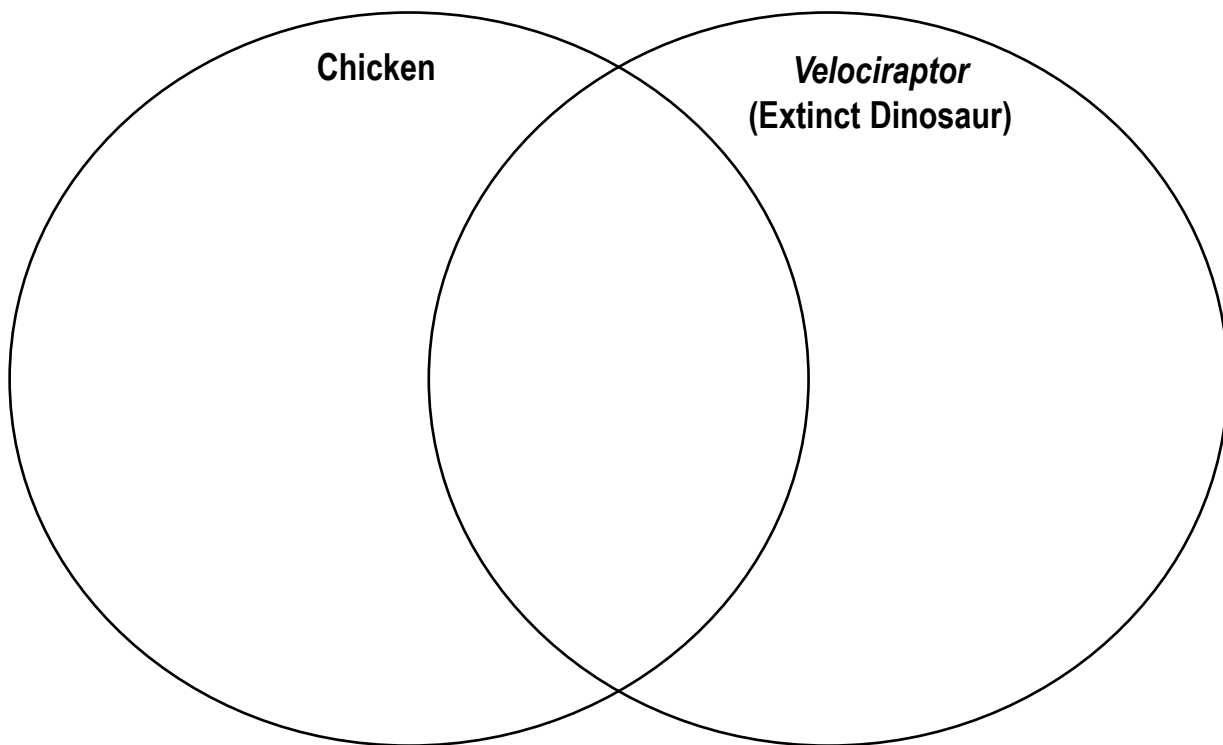
Explanation: Tyrannosaurs were a type of Theropod dinosaur!

Are Birds Dinosaurs?

Not all dinosaurs went extinct 66 million years ago! Birds (class **Aves**) are the one surviving group of **Dinosauria**. Scientists think they came from a group of dinosaurs called the maniraptors (which means 'seizing hands'). These dinosaurs had large hands for their body size, stood erect, and walked on two legs. This means it is correct to say that birds are dinosaurs!

Write each trait in the correct area of the Venn diagram (chicken, *Velociraptor*, or both)

Traits: lays eggs, wings, hands, beak, jaw with teeth, walks upright, walks on two legs, can fly, tiny fused tailbone, flexible tail, claws on feet



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