

Activity: Whose Fossil is this?

Standards: 4.1.1 and 4.1.3

Premise: Students will investigate 3D models of a baby mammoth skeleton (one for its head and one for its entire body) and, by making observations and comparing it to modern animals, will deduce its identity.

Supplies: Students will need a computer or tablet to access the 3D models. Students can also write and take notes with a pencil or on their computer if they desire. There is also a supplement PDF to use during the investigation.

[3D Models Link](#)

[PDF Supplement Link](#)

Before the Activity: Ensure students have a tablet or computer provided to them so they can interact with the 3D models. Have the PDF supplement ready on the big screen and provide students the link to the 3D models.

The Procedure:

1. Go over the definitions of Stability and Change with the class. What are examples in life that stay the same or change over time?
 - a. Review Slide 1 on the PDF Supplement. How have horses changed or stayed the same over millions of years?
2. Slide 2: Have students observe the skulls. Which skull is most similar to the Sabretooth Cat based on their structures? List the similarities and differences among the three skulls. Conclude that we can determine a fossil's modern relative by shared structures.
3. Let the class know that they are going to investigate a mystery fossil and they're going to deduce what it is based on its structures.
4. Model 1: Now have students observe the first model (the baby mammoth skull). Record their observations and share with class.
 - a. Things to point out and discuss (along with other observations students may make)
 - i. Flat teeth means it was likely an herbivore
 - ii. Large hole in the center of the skull; have the students discuss what it could be such as eyes or nose
 - iii. Two small points coming out near the mouth; have the students discuss what it could be (tusks)
 - b. Have the students discuss and argue what animal they think the mystery fossil could be and write down their thoughts

5. Model 2: Now have the students observe the second model (the whole baby mammoth skeleton). Record their observations and share with the class
 - a. Things to point out and discuss
 - i. Pointy and tall back; in modern animals a tall back means the animal has a heavy head. The tall backbone allows muscles to attach to the head so it can support it.
 - ii. Five toes that are point with no claws (some of the feet are hard to tell so students may initially think it is four)
 - iii. Short neck and short tail
 - iv. Four legged creature
 - b. *Please note that the baby mammoth skeleton is about the size of a medium-size dog*
 - c. Have the students discuss one more time what animal they think it could be. Have their ideas updated or change?
6. Slide 3: Now inform the students that they're going to figure out what the mystery fossil's closest relative is. Show them slide 3 and say it will be one of the four animals seen here (lion, vulture, elephant, or bison)
7. Slide 4: First look at the heads of the animals. Which is the most similar? Which is the most different? This can be a great pair-share moment.
8. Slide 5: Now do the same thing for the feet of the animals. Repeat the similar observation and sharing methods as the previous slide.
9. Have the students explain which animal is the closest relative to the mystery fossil (the elephant) and why.
10. Slide 6: Now take the students back 12,000 years ago to the Ice Age and show them the diorama. Our mystery fossil is going to be one of the four ancient animals (Teratornis, Mammoth, Ice Age Bison, or Saber tooth Cat). Students should be able to conclude that the mystery fossil is a mammoth.
 - a. Push the students a little further though. Why is our mystery fossil so small? Because it is a baby!
11. Slide 7: Show the baby mammoth skeleton and congratulate the students.

After the Activity: Reflect with the students how paleontologists deduce a fossil's identity and how they understand its lifestyle based on modern animals. Ask the students how they could go about identifying a mystery fossil based on what they learned today.