



Evaluation and Communication of Fossil Evidence

By: Rachel Aguilar in collaboration with Jen Bauer



Introduction

Overarching Question: How are fossils used as evidence for Evolution?

This lesson has an overall goal of helping students with the following:

- Identify how fossils are formed.
- Communicate how can fossils be used as evidence to support evolution? Demonstrate that fossils can be used for evidence and what can we learn from the discovery of fossils.
- Communicate the importance of evidence in supporting Darwin's theory of evolution understand that the fossil record shows increasing diversity and large scale changes over time, recognize why gaps in fossil evidence exist, know how different lines of evidence are used to determine evolutionary relationships between different species

Materials and Methods

Targeted audience: 9th or 10th grade classroom

Standard:
NGSS standard: HS-LS4-1. **Communicate scientific information that common ancestry and biological evolution are supported by multiple lines of empirical evidence.** [Clarification Statement: Emphasis is on a conceptual understanding of the role each line of evidence has relating to common ancestry and biological evolution. Examples of evidence could include similarities in DNA sequences,

Objective:
By the end of the lesson, students will be able to communicate evidence on how fossils are used to determine evolutionary relationships between different species in the form of an exit slip.

Materials used:
• Guided notes
• Graphic organizers
• Powerpoint presentation
• Fossils

Methods:
5 E Lesson Model

Fossil Material



< Mammoth tooth

Alligator teeth >



< Horse teeth

Shark teeth >



< Skate and ray teeth

Lesson Plan

Overarching Question: How are fossils used as evidence for Evolution?

Using the 5 E Lesson Model

Engage

Relate the experience to the students! If he was to disappear, what could you tell me about his life? What clues or evidence would you use? What is the evidence of your life? 10min



Do Now: If he were to disappear, what could you tell me about this man's life? What are some of the clues or evidence to support our hypothesis?

Quickly Think-Pair-Share:

Answer the following questions:

- What could someone tell about your day from the evidence you left?
- What can't someone else know from the evidence you have left behind?
- How could the evidence of your life be like the fossil record?

Explain

Powerpoint is a mini-lecture with notes on Fossil Evidence. Overarching questions: How are fossils used as evidence for Evolution? 20min
Edpuzzle video and questions/Fossil strips (10 min)



What is a fossil? "Fossils are the remains of long-dead plants and animals that have become preserved in the Earth's crust."

- What is a fossil?
- How are fossils formed?
- What is a fossil?
- What is a fossil?
- What is a fossil?
- What is a fossil?
- What is a fossil?
- What is a fossil?



What are fossils? "Fossils are the remains of long-dead plants and animals that have become preserved in the Earth's crust."

- What are fossils?
- How are fossils formed?
- What are fossils?
- What are fossils?
- What are fossils?
- What are fossils?
- What are fossils?
- What are fossils?



Transitional fossils "Transitional fossils are fossils that link ancient organisms to newer organisms."

- Transitional fossils
- Transitional fossils
- Transitional fossils
- Transitional fossils
- Transitional fossils
- Transitional fossils
- Transitional fossils
- Transitional fossils



Why are fossils important? "Fossils provide a record of when new species appear and when other species disappear (extinct)."

- Why are fossils important?
- Why are fossils important?
- Why are fossils important?
- Why are fossils important?
- Why are fossils important?
- Why are fossils important?
- Why are fossils important?
- Why are fossils important?



Gaps in the fossil record "The fossil record contains some gaps."

- Gaps in the fossil record
- Gaps in the fossil record
- Gaps in the fossil record
- Gaps in the fossil record
- Gaps in the fossil record
- Gaps in the fossil record
- Gaps in the fossil record
- Gaps in the fossil record

Elaborate

Fossil Cards creating a layer of sediment/rocks and analysis of cards: why do they go in that order?
Justify your answer (20 min) Video on whale evolution and think-pair-shares (20 min)



- What is a fossil?
- How are fossils formed?
- What is a fossil?
- What is a fossil?
- What is a fossil?
- What is a fossil?
- What is a fossil?
- What is a fossil?



- What is a fossil?
- How are fossils formed?
- What is a fossil?
- What is a fossil?
- What is a fossil?
- What is a fossil?
- What is a fossil?
- What is a fossil?

Evaluate

Written response to 2 Questions (communicating by writing) 20min

Extension Activity:

Jen Bauer will be available to conduct a video question and answer about fossils and the field of Paleontology. I will also include another lesson on common ancestry that will tie in with this standard.

Acknowledgments

- Jen Bauer for development of questions with Explore Activity and photography of fossils
- The FOSSIL Project and paleontologists who donated fossils
- Ramsey Greene for idea of general fossil identification
- Florida Museum of Natural History, University of Florida

