

PA SEA GRANT LESSON PLAN

Lesson "Fossil Formations – Ancient Oceans" Lesson 1

Grade level: 4 -8

Duration: 40-60 minutes

Materials: Power Point Presentation, Quick Quiz, Group Activity – Fossil Kits

Objectives: Students will be able to define what constitutes a "fossil".
Students will be able to determine the 6 variations of fossil evidence.
Students will be able to examine and identify various fossil specimens to determine the process by which the fossil was formed.

Procedure:

Anticipatory Set: "What are the three types of fossil fuels? How were they formed?"

Answer: Solid – Coal, Liquid-Oil, Gas – Natural gas; 1-200 mya bio process

Introduction: Power Point Presentation (10 minutes)

Slide 1- Cover Page

Slide 2 – Fossil definition, generally 10,000 years old

Slide 3/4 – list of (6) processes of biological evidence

(Slide 3&4) Fossilization/Preservation Processes – Talking Points (15 minutes)

- ▶ Permineralization/Petrification example: most common - bones/wood
- ▶ Carbonization example: impression of plant leaves/dino footprints
- ▶ Amber – Jurassic Park; insect in tree sap
- ▶ Asphalt – La Brea Tar pits; saber tooth tigers
- ▶ Dessication – Mumification, arid regions
- ▶ Refridgeration – Frozen Mammoths, wooly rhinos

(Slide 5) Fossil Formation Process; Permineralization

(Slide 6) Impression Mold or Trace Fossil

- ▶ Exterior mold – imprint or empty space
- ▶ Example of Carbonization fossil

(Slide 7) Dinosaur Eggs

- ▶ Cast Fossil example
- ▶ Example of Permineralization

(Slide 8) How Layers are Formed

- ▶ Ancient Oceans, tectonic plate movement

(Slide 9) Sedimentary Process – Collection sites for scientists

(Slide 10) Bone Slices Under the Microscope

- ▶ Dinosaur means "Terrifying Lizard"
- ▶ Are dinos more closely related to lizards or mammals?

(Slide 11) Why Did Dinosaurs go Extinct?

▶ **Q&A Discussion**

(Slide 12) Meteorite Impact?

(Slide 13) Extinction Theory

▶ Evidence in Gulf of Mexico cenotes

(Slide 14) Paleontology Defined

▶ Study of ancient life through fossil evidence

(Slide 15) Importance of Fossils

(Slide 16) Source Page

(Slide 17) The End

Assessment: 10 minutes; 10 question Quiz

(10 minutes)

Discovery Activity:

(10-15 min)

Group students and place fossil kit on lab desk. Give them a few minutes to examine and determine...What is it? Is it an impression cast or mold fossil? Provide data sheet/complete worksheet as time permits, share answers in group discussion. Allow students 10-15 minutes to examine fossil display and ask questions.

Re-group for summary.

Materials:

- (1) Power Point Presentation -17 slides**
- (2) Fossil Quiz – 10 questions**
- (3) Fossil Kit – 12 fossil samples per box**
- (4) Fossil Fact Sheets – Corresponding with Kits**
- (5) Fossil worksheet – extension/identification activity**
- (6) Fossil Talking points – Slides 3&4**

Sources:

- Allegheny College, Ron Cole, Geology Department Power point images
- www.fossils-facts-and-finds.com
- TREC Natural History Collection – Fossils
- Private Collection; Marine fossils – D. Boughton
- www.gsa.state.al.us

SG-EDU

2/2009