



Deep Time Detectives: What Does a Paleontologist Do?

Lesson by Lacey Moore

Video Title:

- *Paleontology: Paleontologists Study Tracks and Traces*

Activity Subject: paleontology, nature of science

Grade Level: 6-8 grades

Introduction

Students view three paleontologists in action in *Paleontology: Paleontologists Study Tracks and Traces* video as the scientists discover fossils and interpret geologic sites. Each student is assigned a “Spotlight Scientist” to focus on and then meets in small groups with students representing the other two scientists. Students share the geologic time highlighted in each scientist’s vignette and add it to their Earth’s timeline and do a gallery walk focused on the nature of science.

Assessments Worksheet

Time 60-75 min

Group Size Varies; individual, groups of three

Materials

- Internet connection, computer and projector to watch *Paleontology: Paleontologists Study Tracks and Traces* (available to download)
- “Deep Time Detective” Worksheet per student
- Chart paper and markers for each student group

Preparation

Make copies of “Deep Time Detective” Worksheet, one per student.

NEXT GENERATION SCIENCE STANDARDS

MS-ESS1-4 Construct a scientific explanation based on evidence from rock strata for how the geologic time scale is used to organize Earth’s 4.6-billion-year-old history. *[Clarification Statement: Emphasis is on how analyses of rock formations and the fossils they contain are used to establish relative ages of major events in Earth’s history. Examples of Earth’s major events could range from being very recent (such as the last Ice Age or the earliest fossils of Homo sapiens) to very old (such as the formation of Earth or the earliest evidence of life). Examples can include the formation of mountain chains and ocean basins, the evolution or extinction of particular living organisms, or significant volcanic eruptions.] [Assessment Boundary: Assessment does not include recalling the names of specific periods or epochs and events within them.]*

Connections to Nature of Science

Science Investigations Use a Variety of Methods
Scientific investigations use a variety of methods and tools to make measurements and observations.

Science is a Human Endeavor

Men and women from different social, cultural and ethnic backgrounds work as scientists and engineers.

LEARNING OBJECTIVES

After this lesson, students will be able to:

- Recognize that not all scientists look alike, wear white coats and work in labs--they are diverse individuals.
- Describe the kind of work paleontologists do while finding evidence of Earth’s history in fossil records and rock layers.
- Relatively age the fossils highlighted in the video compared to other Earth events.



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Procedure

1. CONNECT TO PREVIOUS LESSONS AND INTRODUCE LESSON OBJECTIVE. (5-10 MIN)

Remind students of the focus question: *How do scientists figure out and sequence major events in Earth's history?* So far, students have learned about the Cambrian explosion and other major Earth events. Students have also applied relative dating methods scientists use to sequence major events and applied those methods by aging features in the schoolyard and sediment layers in the classroom. Ask: *What does doing science look like for a paleontologist trying to figure out and sequence Earth's history?* and have students think-pair-share. Solicit student ideas and tell them they will watch a video to help them figure this out. Remind students that they need their Earth's timeline that they began in *Major Earth Events, Part One* for this lesson.

2. WATCH VIDEO PALEONTOLOGY: PALEONTOLOGISTS STUDY TRACKS AND TRACES. (20 MIN)

Tell students they are each going to get a Spotlight Scientist to focus on in the video. Number students off in threes and assign them one of the following scientists: Jenny Clack (0 min-2 min 40 sec), Whitey Hagadorn (2 min 40 sec-5 min 15 sec) or Simon Braddy (5 min 15 sec- 8 min 07 sec). Pass out "Deep Time Detective" Worksheet and go over it briefly. Students will answer the questions based upon their scientist.

3. STUDENTS GET INTO SMALL GROUPS WITH OTHER SCIENTISTS AND SHARE. (10 MIN)

Have students get into groups of three with students representing other scientists. Each student will share who their scientist is, their geologic site, the time of their geologic site and what evidence of Earth's past is found there. They should record the time of each scientist's geologic site in the video on their Earth's timeline.

4. MIXED STUDENT GROUPS RECORD IDEAS ABOUT THE NATURE OF SCIENCE ON CHART PAPER. (20 MIN)

Then have students record their ideas (allow illustrations too) regarding the following questions on the chart paper:

- How do rock layers and fossil records help us understand Earth's history?
- What skills might it be helpful for a scientist (like a paleontologist) to possess?
- How is a geologic site and a scientist the same or different as what you imagined?
- How is what the scientists do in the lab and field the same and different as what you have done in the schoolyard and classroom?

Remind students to use their own life experience as well as both *Cambrian Explosion* and *Paleontology* videos to answer these questions. Give students reminders on time limit as they meet in groups.



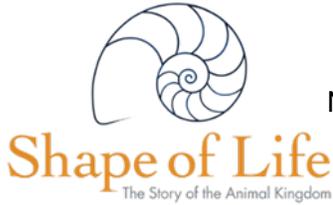
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5. **GALLERY WALK AND WHOLE CLASS DEBRIEF. (15 MIN)**

Once students are done, have them tape their chart paper on the wall. Give students 10-15 minutes to walk around and review groups' work. Depending on your students, you may want to more formally rotate groups from chart paper to chart paper.

Once students are back in their seats, guide a discussion around student insights and observations. Questions may include:

- Would you be interested in being a paleontologist? Why or why not?
- How did the video help you better understand how scientists make sense of and sequence Earth's history?
- Thinking of the previous lessons, what is still confusing and what questions do you have?



Name _____ Period/Class _____ Date _____

Deep Time Detectives- Page 1 Student's Edition

What does doing science look like for a paleontologist trying to understand Earth's history?

1. Watch *Paleontology: Paleontologists Study Tracks and Traces*.

- Who is your "Spotlight Scientist?" How are they similar or different to what you imagine a scientist looking like?
- Describe the geologic site featured in the video. How did your scientist use fossil records and rock layers to interpret Earth's history?
- What time period in Earth's history did the fossil record and rock layers tell your scientist a story about?
- What skills (science or otherwise) might it be helpful for a scientist, either a paleontologist or geologist, to have?
- How is what the scientist does similar to what you did in the schoolyard? Different?
- How is what the scientist does similar to what you did to represent and interpret rock layers and fossil records in the classroom? Different?