

RESOURCE LIBRARY
ACTIVITY : 20 MINS

Unpack the Evidence

Students practice scientific thinking to understand evidence and inference.

GRADES

6 - 8

SUBJECTS

Biology, Geography, Physical Geography

OVERVIEW

Students practice scientific thinking to understand evidence and inference.

For the complete activity with media resources, visit:

<http://www.nationalgeographic.org/activity/unpack-the-evidence/>

Program



DIRECTIONS

1. Build background.

Ask students to imagine they are producing a scientific film about an extinct animal that lived millions of years ago. Ask: *How would you know what it looked like and how it behaved?*

Explain that scientists study fossils to learn about an animal's size and skeletal structure, when and where it lived, and sometimes what it ate or was eaten by. Tell students that scientists study behaviors of living animals for clues to their ancient relatives, and scientists and filmmakers make models and use computers to help bring the past to life.

2. Start the demonstration.

Prepare a backpack with books and other items you will show the class. Include items students can use to hypothesize about the person who owns the bag. Show students the backpack and ask them to use scientific thinking to learn more about this backpack. As you examine the backpack and its contents, guide students through the following steps.

3. Prompt students to identify evidence.

Ask: *What can you observe?* Prompt students to describe the backpack and the contents inside. (size, color, style, descriptions of objects as they are shown)

4. Prompt students to make inferences.

Ask: *To whom does it belong?* Prompt students to make inferences about the person who owns the backpack, based on the information they have acquired. Ask: *What behaviors can you infer about the owner, based on the contents and how they might be used?*

5. Introduce the vocabulary.

Write *evidence* and *inference* on the board, and discuss these terms with students. Tell students that evidence is data that can be measured, observed, examined, and analyzed to support a conclusion. Ask students to share what they know about the backpack and its contents that is based on evidence. Their answers should include descriptions of the bag and its contents. Then explain to students that inference is an explanation derived by reasoning. Ask students to share information they acquired during the backpack activity that is based on inference—ideas they have that cannot be directly observed in the contents. Their answers should include descriptions of the type of person who may own the bag and how they used the objects found inside.

6. Have students make connections.

Introduce students to the work paleontologists do. Explain that paleontologists search for, uncover, and study fossil remains, which are evidence of prehistoric animals. Tell students that, as they did in the backpack activity, paleontologists make inferences about the evidence they uncover. For example, a shark's tooth embedded in a fossilized bone may lead a paleontologist to infer that a shark bit the animal.

OBJECTIVES

Subjects & Disciplines

Biology

Geography

- Physical Geography

Learning Objectives

Students will:

- distinguish between evidence and inference

Teaching Approach

- Learning-for-use

Teaching Methods

- Demonstrations
- Discussions

Skills Summary

This activity targets the following skills:

- Critical Thinking Skills
 - Understanding

National Standards, Principles, and Practices

NATIONAL GEOGRAPHY STANDARDS

- Standard 17:

How to apply geography to interpret the past

NATIONAL SCIENCE EDUCATION STANDARDS

- (5-8) Standard A-2:

Understandings about scientific inquiry

Preparation

What You'll Need

MATERIALS YOU PROVIDE

- Backpack
- Items that might be found in a backpack

PHYSICAL SPACE

- Classroom

GROUPING

- Large-group instruction

OTHER NOTES

Before starting this activity, fill a backpack with books and other items that might be found in a backpack. Include items students can use to hypothesize about the person who owns the bag.

BACKGROUND & VOCABULARY

Background Information

Paleontologists and filmmakers use evidence and inference to reconstruct the past.

Prior Knowledge

[]

Recommended Prior Activities

- None

Vocabulary

Term	Part of Speech	Definition
evidence	<i>noun</i>	data that can be measured, observed, examined, and analyzed to support a conclusion.
fossil	<i>noun</i>	remnant, impression, or trace of an ancient organism.
inference	<i>noun</i>	explanation derived by reasoning.
observe	<i>verb</i>	to watch.
paleontology	<i>noun</i>	the study of fossils and life from early geologic periods.

For Further Exploration

Websites

- [National Geographic: Sea Monsters—A Prehistoric Adventure](#)

FUNDER



This material is based in part upon work supported by the National Science

Foundation under Grant No. DRL-1114251. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author and do not necessarily reflect the views of the National Science Foundation.



© 1996–2023 National Geographic Society. All rights reserved.