



Inferring the Characteristics of People from Their Hands

Adapted from *Adventures in Paleontology*, Chapter 2 Activity 1, p.17.

Grade Level: Grades 5-8

Preparation Time: 10-30 minutes

Activity Duration: 30 minutes-1 hour or more

Concepts Addressed

- Science is a process by which we learn about the natural world using our senses and extensions of our senses.
- Science follows a process guided by certain parameters.
- Science relies on the observation of physical evidence from the natural world.
- Physical evidence is examined and interpreted through logic.
- An observation is a description of physical evidence based on what we see, feel, hear, smell, or taste.
- An inference is a logical conclusion based on observation of physical evidence.
- A hypothesis is a scientific idea supported by physical evidence.

Objectives

The student will:

- Make observations about an unknown person's hand.
- Students will develop a hypothesis about who the hand belongs to based on their observations.

Materials Included

- Dark cloth to cover a doorway with a small slit for hand
- Rulers
- Magnifying glasses
- Stopwatch
- Bat skeleton diagram (for extension—transparency and PowerPoint slide on CD-ROM)

Materials Not Included

- Dry erase board and markers
- Mystery person
- Chair
- Desk
- Doorway

Background

What can you tell about people by examining only their hands? How close could you estimate the person's age? What clues would you look for in the appearance and texture of the skin, the condition of the fingernails, the feel of the finger bones and joints, the behavior of the hand of the hidden person? What other characteristics of the person can you infer from the hand?

This activity is a model of how paleontologists construct ideas about fossils they find and study. In the model the hand is the fossil and the person behind the screen is the unknown organism from the past. Ordinarily, paleontologists know about as much about fossils and the whole extinct organism as you know about hands and people. The more you study the hands of people, the better you become in prediction what people are like by examining their hands.

Set-Up

1. Ahead of time, arrange for someone (a parent, teacher, volunteer) outside of the classroom to be the volunteer "hand".
2. On the day of the activity, hang the black material with the slit so that it entirely covers an open doorway.
3. Place a table with rulers, magnifying glasses and a stopwatch on the side of the doorway where the students will be.
4. Place a chair on the other side of the doorway for the mystery person to sit.
5. When you are ready to begin the hand part of the activity, have the mystery person slide just their hand through the slit in the fabric.

Procedure

1. Prior to the appearance of the hand, create a list on the board of characteristics you can observe by examining the hands of people (e.g. size, color, color of hair, rough skin, pulse, etc.). Next to each observation describe possible inferences you will look for in the hand to give good ideas about the whole person (e.g. small hand infers child or female). Perhaps you will do this planning the day before the hand of the mystery person enters your classroom through a hole in the sheet that covers the doorway.
2. Divide the class into groups of about 4-5 students. After the hand appears at the doorway, allow each group to take turns examining the hand. On the table with the hand should be some instruments for examining features of the hand: a magnifying glass to see the color of the hair, a ruler to compare the finger lengths of the mystery hand to your own, and a stopwatch to compare the pulse of the hand to your own. Record your data. After returning to your seat, study the data. Then write a hypothesis about what the mystery person is like, including its physical appearance, its behaviors and anything else you can infer (for example, the mystery hand belongs to a male about 30 years old who works with paint...).
3. After the class has discussed everyone's observations and inferences, a class composite of the mystery person can be assembled. Since the mystery person represents a whole living fossil, something paleontologists never get to see, perhaps this activity would be more true to science if the class would never see the mystery person. The teacher or class will have to decide whether the mystery person (fossil) should ever show itself.

Extensions

- Allow students to examine the skeleton of a bat (this activity works best if students are not told that the animal is a bat). Ask students what can be inferred about the biology of this animal by observing its skeleton?

