

Applied Science - Science and Math (4C)

Lab



OBJECTIVES:

- Investigating human senses by collecting data.
- Interpreting data.

Students will find sensitive parts of the hand.

VOCABULARY:

- discovery
- interpretation
- perception
- senses
- touch

MATERIALS:

- 4 similar shapes



BACKGROUND:

Many people do not consider the study of perception as "science." However, to understand perception, we have to understand how humans perceive things. Dr. James Gibson, an American scientist, proposed that humans learn by interacting with a stimulus. One of his most important experimental works included "the great cookie-cutter experiment." This lab will reenact the experiment.

The different shapes represent a variety of options to make the experiment statistically observable. In the first experiment, shapes are pressed on the skin with standard pressure. In this condition, the participants (Gibson found) could manage correct identifications of the cutters in only 29% of the cases. But when the participants are permitted to explore with their fingers (as in the second experiment), 95% of the identifications were correct. Why is this so? There are more sensory "cells" in the fingers. The ability to touch the object fully transmits more of the senses to the brain to give a better interpretation.

PROCEDURE:

1. This experiment relates to the field of tactile experience, the way one feels the shapes and textures of things with one's hands. Have students do the experiment as described on the lab sheet.
2. Reinforce how important it is to do the experiments that see, feel, touch, and smell, in order to get the value of the entire experiment. Many aspects of science are "hands on" and are many

times the only way to fully appreciate science.

3. Read the lab sheet with your students. The instructions need to be explained carefully. Two students test each other to evaluate whether the palm of their hand or their fingers can detect the shape of an object. Make sure that the partner who is guessing the shapes, closes their eyes and keeps their hand flat when their partner is testing the palm of their hand.
4. You will need four similar shapes like a heart, spade, clover and diamond. The shapes should be similar in size and weight. Go over the different shapes with the students.
5. Students will find that they can figure out the shape easier if they use their fingers. There are more sense cells in the fingers, so the brain gets more "clues" of what it is. This is also a reason why hands-on is so important, it allows the nerves to actually imprint what is being seen. All senses together help humans remember for a long period of time, whereas a reading assignment from a textbook does not have the same impact.