

Science

Detective Science- Finger Prints

Purpose:

- Learn about detective science
- Make your own fingerprint card

Supplies:

- 4" X 6" index cards
- 1 – 1.5 inch wide scotch tape
- #2 pencils,
- plain white paper

Activity 1: Fingerprints

Introduction to Fingerprinting:

Fingers have patterns on them that are unique to each individual. They are formed by bumps and ridges on your dermis that project through the epidermis. These fingerprint patterns remain the same for a lifetime. Even identical twins do not have the same fingerprints.

What are fingerprints used for?

- identify criminals
- identify lost children
- security checks

Dactylography is the scientific study of fingerprints. It was first developed nearly a hundred years ago to identify convicts. When law enforcers realized that fingerprints are also left behind on all manner of surfaces, the use was extended to catching criminals as well. Dactylography is still an important tool for police.

Instructions:

1. Prepare each index card for the prints by dividing it into ten spaces and labeling each space. For example, left hand or right hand and label which fingerprint will go in which space.

2. Make a “graphite pad” by using a pencil, placing it on its side and moving it back and forth on the plain piece of paper until you have a large area of graphite. **Note:** Do not make prints of fingertips but rather of the pads of fingers, near the joint crease, because that is where the most interesting patterns are.

3. To use the graphite pads, press and roll finger firmly on the penciled area, then stick a short piece of tape to the finger pad area, pressing down thoroughly. Remove the tape and press it onto the print record card.

Tip: Have participants work in pairs so that they can help each other get the print. Prints will usually look better this way.

4. Practice a few times so participants can get at least two good prints.

5. After all prints are made, labeled and placed on the index card in the appropriate space, compare prints for similarities and differences.

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Questions for discussion

Are the two prints from the same hand more alike than prints from different people? How?

What are the positions of those patterns on the finger (how close they are to the joint line)?

What kinds of patterns do you see? Give names to the patterns (circles, triangles, curvy lines)

Fingerprint patterns have “official” names such as arches, whorls, and loops.

Compare the size of the patterns (such as how many ridges make up a loop).

Note: while scars, such as the white line on one of the sample prints in this lesson, are the easiest patterns to see, they cannot be used either for classification or identification. They are not unique in the way that ridge patterns are, and they also change over time—making them unreliable for these purposes.

Additional Activities:

- Divide the participants up by patterns, either grouping them physically or grouping their cards by pattern.
- Which is the most common pattern?
- Graph results, or figure fractional or percentage representation of each type.
- Pass prints to another group and see if they agree with classification.

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Arch-type Patterns

Arch-type patterns are generally divided into two patterns – plain and tented. The plain arch is the simplest of all fingerprint patterns. It is formed by ridges entering from one side of the print and exiting the opposite side with a gentle rise or wave in the center of the pattern.

Tented arch is like the plain arch except that instead of rising smoothly at the center, there is a sharp up thrust or spike in the center ridge lines.

Whorl-type Patterns

Whorl-type patterns are made up of plain whorls and composites. It has a ridge line that may be a spiral, an oval, or any variant of a circle.

Lateral pocket loops

Lateral pocket loops are loop-type patterns in which two loops are intertwined. One of the loops surrounds the other.



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