

My Traits Please!

Lesson Overview

The purpose of this activity is for students to explore inherited traits. Use this explore activity when beginning any unit on genetics.

Suggested Grade Levels: 3-8

Standards for Lesson

Content Standard A: Science as Inquiry

Content Standard C: Life Science

VA SOL:

Standard LS.13

The student will investigate and understand that organisms reproduce and transmit genetic information to new generations such as:

- Genotypes and phenotypes,
- Factors affecting the expression of traits,
- Characteristics that can and cannot be inherited.

Objectives

Know

- Traits are inherited and are observable characteristics.
- Some combination of traits is more common than others.
- Data can be organized visually.
- Traits can be either dominant or recessive.

Understand

- Genetic traits paint a picture of who we are as human beings.

Do

- Differentiate between characteristics that can be inherited and those that cannot be inherited.
- Organize and display data in order to compare their traits with classmates.

Time Needed

This lesson can be completed in one class period.

Materials for Lesson

- PTC Paper
- Hard candies
- Leaf cut outs
- Large butcher paper
- Tape
- Scissors

Content Background

Information for teacher:

The basic laws of Mendelian genetics explain the transmission of most traits that can be inherited from generation to generation. Genes are sections of a chromosome that carry the code for a particular trait. Traits that are expressed through genes can be inherited. Characteristics that are acquired through environmental influences, such as injuries or practiced skills, cannot be inherited.

Preparation:

Before beginning, prepare the tree diagram on the wall or the overhead for students to write on.

Engage

Ask students what they already know about inherited characteristics. Post responses. Tell students they are going to do an activity to collect data in order to analyze the data for patterns.

Explore

Give each student a cut out leaf (see page 4). Ask students if they can roll their tongue. (Model this for students.) Have students mark on their leaf if they are able to do this.

Next, ask students if they have attached or unattached earlobes. Show students an example. Have them record on their leaf if they do or they don't. Then, hand out the PTC paper and instruct them to place the paper on the tip of their tongue to see if they can taste the chemical. The chemical tastes bitter to those who can taste it. For those that cannot taste it, they will not taste anything.

Give students hard candy to neutralize the taste of the PTC paper. Have them mark on their leaf if they did or did not taste the chemical.

Explain

Have students place their leaf on the "trait tree." Model this for students. They should start at the base of the branches and working their way out to the tips. Call students in groups to place their leaves on the tree.

Discussion:

- What is the most common combination of traits in the class?
- What is the least common combination in the class?
- Does this correspond to the most and least common individual traits in the class?

Ask students what they remember about population-what is a population? Tell students that this exercise should remind us that as a population, our traits make us alike, but our individual combinations of traits make us each unique.

Elaborate

Have students use the completed trait tree to calculate the percentage of the class population with a certain trait combination.

$$\frac{\text{Number of leaves on a particular branch}}{\text{Total number of leaves}} \times 100 = 100\%$$

Have students look at differences between boys and girls.

Evaluate

Have students write about the differences in the traits expressed in the data from their class. Students can also go home and find out what traits their parents have.

Exit Ticket: How are populations alike and different?

