

Sense-ational Science
Pre-Lab Activity 1 – Teacher Guide
Grades 2-3

Overview

The students are introduced to the five senses and how they work together to help them gather information.

Materials

- Equipment to view the videos (computer, projector, etc.)
- [Internet access to view Sense-ational Science Videos](#) (located on our website)
- Sense Bar Graph handout (1 per student)
- Sense organ pictures (1 copy) – pages need to be cut in half

Getting Ready

- Locate the sense videos (located on our website)
- Print the Bar Graph handout (1 copy per student)
- Prepare supplies to complete the bar graph (scissors, glue, pencil)

Procedure

Access the students' background knowledge by telling the students that today they are going to be discussing their senses. Using the [Sense Organ Pictures](#) – hold up a picture and ask the students to name the sense. Discuss the sense with your students (i.e. what part of the body uses that sense, provide an example of the sense, describe how they use that body part to gather information about an item, etc.).

Examples:

“How do you know if ice cream is cold?”

“How could you find out if a rock was warm?”

“How would you explain fireworks to someone?”

Explain to the students that they are going to watch 4 videos of science experiments. They are going to use the [Sense Bar Graph handout](#) to show which senses they used during the experiment. When they identify a sense they will cut out the corresponding sense picture and glue it on the bar graph. For example, if the video showed a scientist sucking an egg into a glass beaker – the students would include in their bar graph:

- EYE because they can see the egg being sucked in the beaker
- EAR because you will hear a loud pop
- TOUCH because the scientist touches the egg or heat was applied inside the beaker

At this time – it would be a great idea to remind students that a scientist NEVER tastes anything in lab! This could be dangerous to the scientist!!

The next step is to show the videos to the students. Give a brief explanation of each video at the beginning (listed below). Feel free to play the video a few times if the students need time to process their thoughts. Have the students complete their bar graph to correlate to what they saw in the video. Then discuss their responses and have them explain why they chose the senses they did. Each video selection is given a main sense it appeals to but ALL of them are multi-sensory.

1: **(SMELL)** – Sulfuric Acid and Sugar

In this video selection you are going to see some white sugar (like you add to tea or in baking a cake) in a beaker. Then a chemical called sulfuric acid is poured over the top of it. Watch what happens.

Things they should notice are: sugar turns brown then black, starts to smoke, starts to expand and rises out of beaker forming a shape like a candy cane.

Discuss what the students witnessed.

This demonstration had to be conducted inside a vented hood in the lab because of the dangerous odors produced. Really play up the smoke (actually steam) escaping. Say, “Do you think it is hot to touch?” What do you think that substance smells like?” **(Rotten eggs because of the sulfuric acid and burned sugar)**

FYI: A chemical reaction occurs between these two compositions. It produces heat (exothermic).

2: **(SIGHT)** – Liquid Nitrogen

In this video selection you will see some liquid nitrogen in a metal bowl. Then you will see the liquid nitrogen being poured down a flight of stairs. Did you see the steam cloud over the top of the bowl? Did you see it bubbling? Do you think that the liquid nitrogen is hot or cold? Think about temperatures for a minute. The temperature at which water starts to turn into ice is 32 degrees Fahrenheit. The temperature of the liquid nitrogen is -320 degrees Fahrenheit. That is 320 degrees past zero!!!!

What senses did you use to learn about liquid nitrogen? Make sure you record the students' responses if you are keeping track of them to use for the bar graph activity.

FYI: The bowl (at room temperature) is much warmer than the liquid nitrogen. When the liquid nitrogen is poured into the bowl, it begins to boil. Some of the vapor forms steam (cloud above bowl) as it condenses. Then it evaporates into the air. When poured onto the steps it evaporates quickly but you hear a popping sound and see the vapor as it condenses quickly before evaporating into the air.

#3: (TOUCH) – Test Tube

In this video selection you will see a test tube that has a black cork and a piece of glass tubing sticking out of it. There is a small amount of water inside the test tube. It is being heated over a flame from a candle. Then the lab director will dip the glass tubing into the beaker of colored water. Watch what happens.

Discuss what the students witnessed. They should see the colored water go into the test tube. They should notice a black substance forming on the bottom of the test tube close to the flame. If they are careful observers they may even see a small amount of steam escaping the glass tubing right before the test tube is placed into the colored water. Since the test tube is held over a flame, do you think the test tube will be hot or cold? Why is the lab director holding the test tube with the special metal holder? Did the water enter the test tube quickly or slowly?

FYI: When the water and air inside the test tube was heated, an area of low air pressure was created. When the glass tubing was placed into the beaker of colored water, high air pressure in the room pushed the water into the test tube wanting to create equal air pressure everywhere.

#4: (HEARING) – Nut in Balloon and/or Palm Pipes (feel free to show one or both videos)

In the Nut in Balloon selection you will see the lab director holding a balloon and then moving that balloon around.

Discuss what the students witnessed. The students should hear a whirling sound as the nut moves around inside the balloon. If the balloon is moved faster is the sound different?

FYI: When the nut inside the balloon was spun around, it created a vibration that produced a high pitched sound. If the nut was spun at a slower pace the vibration would not be as strong and the pitch would be lower.

In the Palm Pipes selection, the students should see 4 lab directors holding pipes. Watch what happens.

Each lab director will strike the pipe with their palm to make a sound. Each pipe makes a different sound. Can you identify the song the lab directors played on the palm pipes?
(Mary Had A Little Lamb)

FYI: The palm pipes were different lengths and each one produced a different note on a scale when struck with the palm.

Explanation

See the FYI note under each description of the experiment.

Assessment

The bar graph handout serves as the formative assessment for this lesson plan.

If you would like to use the bar graph as a learning tool during the lesson, feel free to make additional copies of the bar graph and provide your own additional videos or verbal scenarios for the students to use for an assessment.