TASTEBUDS AND YOUR TONGUE

By: Joy Bueche

Objectives

Using the SOAR Set-Ups 3 and 4: Stand & View with 1X and 30X, students will compare themselves to others in the class as they count taste buds to determine if they are supertasters, medium tasters, or non-tasters as described in Patricia Gadsby's Discover article (see References below). Students will collect and record data on a template and later graph this information on a chart as a whole class activity.

Grade Levels: K-4

LA State Standards

SI-E-A2, SI-E-A3, SI-E-A4, SI-E-A5, SI-E-A6, SI-E-A7 and N-1-E, N-2-E, M-1-E, M-3-E, G-5-E, G-6-E

Materials

- SOAR with stand
- 1 inch squares of black paper with hole punched in middle
- "holes" from punched paper
- chart for student to record data
- clear plastic wrap or sandwich bags
- ruler, tape, pencils, crayons (3 colors), markers
- cotton swabs
- chart paper
- blue food coloring (or blue-colored candy)

Procedure

1. At each work area, have a ruler, a pencil, some "holes" from the hole-punched paper, and some glue. Assist the students as they draw a line 1 inch in length. Ask the students to estimate the number of holes it will take to equal 1 inch. Have students glue holes on top of the line (four will fit). As the students are gluing the holes, begin painting tongues blue, as described in #2.

2. Paint each student's tongue blue, using a cotton swab and the blue food coloring, or if you prefer, use blue candy!

3. Move the students to the area where the SOAR is set up. Have the students leave their ruler work on their worktables. Using SOAR Set-Up 3: Stand & View (1X) focus the ruler on the screen so that all can see. Distribute a hole to each child and have them hold it on a finger. Ask each student to

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estimate how many holes it would take to fill up the inch mark on the ruler. Each student should hold up fingers showing the number of his/her estimate. Record the information. Place one hole next to the ruler so that all can see the image on the TV for comparison. Allow students to modify their estimates. Next place a second, third, and fourth hole next to the ruler for comparison. Have students note that if takes four holes to equal one inch and that each hole is 1/4 inch. Write 1/4 on the chart paper. Note that for the purpose of this experiment, we will be using a 1/4-inch hole.

Note with the students that the image is magnified on the TV screen, and have them tell what they think magnification means. With older students you may wish to determine the degree of magnification. Record the image of the ruler with the REC button, and then use the real ruler to measure the image of a 1 -inch length as it appears on the screen. This measurement will be the magnification factor, e.g., 10.5X, if the magnified image of 1 inch measures 10.5 inches on the TV screen. Every object viewed at that particular setting will therefore be magnified 10.5 times longer than its real size. (Remember that if the SOAR "1X" lens is refocused, the magnification factor will change!)

4. Using SOAR Set-Up 4: Stand & View (30X) take the one inch square piece of black paper with the 1/4" hole punched in the middle and tape it over the lens as shown below, so that the entire hole is visible on the TV screen. Do not tape over the hole. Have a 6" length of plastic wrap or a clear sandwich bag available for each student. Cover the entire lens tip of the SOAR with the wrap, stretching and holding it as shown below to avoid wrinkles and glare. Have each student come forward, slightly stick out his or her tongue, and gently bite it (to help keep it still). Capture a good image on the screen with the REC button. After the image is captured, have the student return to his seat. PLAY the image and count, with the students, the number of taste buds. Have students record the data on their template and have a recorder record the number on the chart . ERASE the captured image(s) and continue with the next student. Be sure and change the plastic wrap after each use.

6. Using crayons, sort and analyze data. The "tasters" can be categorized into 3 groups: Supertasters will have 30+ taste buds; medium tasters will have 15-30; and non-tasters will have fewer that 15. Have students identify and color code the data.

7. Graph the information.

References

1. Gadsby, Patricia: "Tourist in a Taste Lab", Discover, Vol. 21, No. 7 (July, 2000) text only link
2. "Guide to Science Kits K-5" East Baton Rouge Parish School System, Baton Rouge, La., 1998.
3. "Louisiana Mathematics Framework",State Standards For Curriculum Development, 1977.
4. "Louisiana Science Framework", State Standards For Curriculum Development, 1997.
5. "Science Content Standards", National Science Education Standards, National Research Council, 1996.

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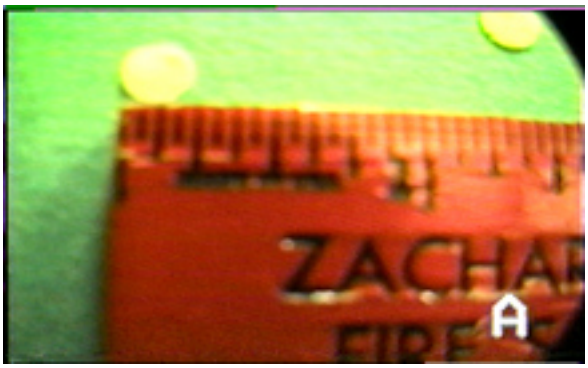
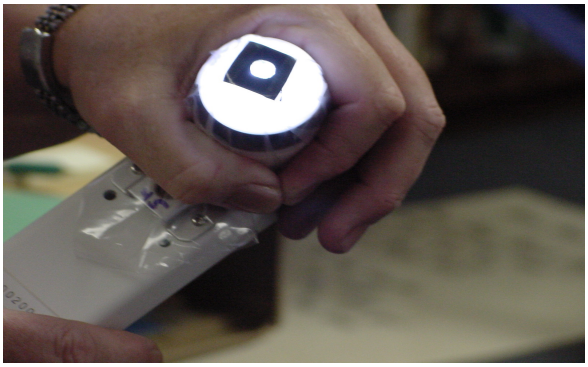
Photos



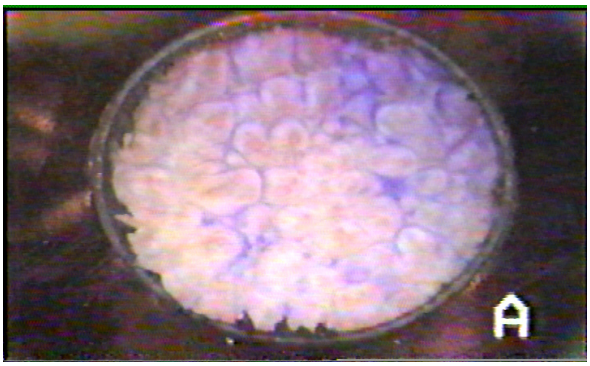
1X lens Stand and View - comparing size of hole to ruler

1X lens Stand and View - comparing # of holes equal to 1"



30x lens - The black paper has a 1/4" hole punched in the center. The hole is taped over the center of the lens. A clear plastic sheet is held tightly against the lens.

A student volunteer views her taste buds with the 30x lens.



Sample of image using the 30x lens. Taste buds have pink centers and are outlined in blue. Hole in black paper is 1/4" in diameter.

Another student's taste buds.

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