

GROW YOUR PALS PROGRAM GUIDE



THE NATIONAL FFA MENTORING PROGRAM

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LESSON 3.31

*Testing Laboratories Presents:
Taste Buds and Hot or Cold*

Unit:
MISCELLANEOUS

PRECEPTS

- A. Action
 - A4. Identify and use resources
- C. Vision
 - C2. Conceptualize ideas



Lesson Type:
Small Group

NATIONAL STANDARDS

- CS.11.02.01.b. Implement an experimental design to test a formulated hypothesis.
- NL-ENG.K-12.4 – Communication Skills
- NL-ENG.K-12.12 – Applying Language Skills
- NS.K-4.1 – Science as Inquiry

STUDENT LEARNING OBJECTIVES

As a result of this lesson, the student will ...

- Identify where different *taste* buds are located on the tongue.





TIME

Instruction time for this lesson: **30 minutes.**



RESOURCES

Label Tongue Taste Areas Printout - EnchantedLearning.com. (n.d.). ENCHANTED LEARNING HOME PAGE. Retrieved April 16, 2010, from <http://www.enchantedlearning.com/subjects/anatomy/tongue/label/labeltongue.shtml>

National FFA Organization. (2003). LifeKnowledge Precepts and Signs of Success.



TOOLS, EQUIPMENT AND SUPPLIES

- ✓ White laboratory coat for teacher
- ✓ Writing surface
- ✓ Jellybeans for each student in a zip-close bag - flavors: cherry, lime, lemon and orange
- ✓ Writing utensils
- ✓ Index cards
- ✓ Assorted colored pencils
- ✓ PALS3.31.SG.AS.A -Tongue diagram for each student
- ✓ Eye droppers or small paper/plastic cups – three per student
- ✓ ½ cup water mixed with 1 tablespoon of salt in a cup
- ✓ ½ cup water mixed with 1 tablespoon of lemon juice in a cup
- ✓ ½ cup water mixed with 1 tablespoon of sugar in a cup
- ✓ Drinking glass ¾ full of hot water - not hot enough to endanger students
- ✓ Drinking glass ¾ full of cold water
- ✓ Drinking glass ¾ full of room temperature water
- ✓ Paper towels for spills
- ✓ PALS3.31.SG.ASSESS.A

KEY TERMS



The following term is presented in this lesson and appears in ***bold italics***:

Taste



CONTENT OUTLINE

- I. Identify where different *taste* buds are located on the tongue
 - A. Salty-bottom edge of tongue
 - B. Sour-either side of tongue
 - C. Sweet-tip of tongue
- II. Explain how the sense of touch reacts under different stimuli
 - A. Hot
 - B. Room temperature
 - C. Cold

INTEREST APPROACH

As students enter the classroom, direct their attention to the four different flavors of jellybeans recorded on the writing surface: cherry, lime, lemon and orange. The teacher should be wearing a white laboratory coat, if possible.



Welcome to the “Testing Laboratory.” Today you are all investigators and will determine various factors throughout this lesson. The first investigation you are involved in will be to determine the flavor of several jellybeans inside of a bag. Yes, it may seem like a very simple task, but it will be the first investigation to be held in the “Testing Laboratory.” When I say TEST open your bag; eat one jellybean. On the index card provided, write the color of the jellybean and the flavor you believe you just ate. Your options are cherry, lime, lemon and orange.

Options should be listed on the board to assist students with spelling complications.



Once you have tested all jellybeans and recorded the answer, place your Ziploc bag in the trash and return to your seat. This first investigation will be completed in less than two minutes. What questions do you have?

TEST

Distribute bags, writing utensils and index cards.

Walk around the classroom ensuring all students are working diligently. Give a one-minute and a 30-second warning.



Great job on completing the first investigation. Investigators, when I say the color of a jellybean, as a class, respond with the flavor you believe that was associated with the color. What flavor did we decide was associated with the red jellybean?

Answers should be cherry.



Excellent! What flavor did Testing Laboratories decide was associated with the yellow jellybean?

Answer should be lemon.



Wow, Testing Laboratories has some very talented testers. Let's see, what was decided when tasting the green jellybean?

Answers should be lime.



And the successes keep coming in for Testing Laboratories. Let's check out the last and final color. How about the orange jellybean?

Answers should be orange.



This was a very successful first test for the investigators at Testing Laboratories. As our tests continue, it is very important for you to pay close attention and follow directions. The tests that we do in Testing Laboratories today can not be done without an adult. The information that we will learn from these tests will help guide you throughout your life. Let's get started.

SUMMARY OF CONTENT AND TEACHING STRATEGIES

OBJECTIVE 1. | Identify where different *taste* buds are located on the tongue.



- A. Salty-bottom edge of tongue
- B. Sour-either side of tongue
- C. Sweet-tip of tongue

If the group is small enough, the teacher can administer the next laboratory test to all the students. If too large and time consuming, break the group into smaller sub-groups. If using sub-groups, be sure to monitor student "performing" test, as to not hurt the student while testing with hot water.

Prior to the beginning of class, create the following mixtures in three individually labeled cups. Be sure not to write the exact name, as to not give away the mixture to students. Label each mixture as follows: 1 (salt); 2 (lemon juice); 3 (sugar).

1st test— $\frac{1}{2}$ cup water mixed with a tablespoon of salt

2nd test--½ cup water mixed with a tablespoon of lemon juice

3rd test--½ cup water mixed with a tablespoon of sugar

*Use a new eyedropper to drip solution onto students' tongues or place tiny amounts of solutions in separate plastic/paper cups for students to **taste** from. Students will then mark on PALS3.31.SG.AS.A where the **taste** was "felt" the most on their tongues.*

On writing surface, have the following words recorded: Sweet, Sour, Salty.



Investigators, we are now ready to begin the second round of testing at Testing Laboratories. I will be assisting you for this experiment. Each of us will **taste** a solution placed on our tongues. Once the solution is on your tongue, move it around your tongue for **taste** and mark the location you **tasted** the solution most on the tongue map each of us will have. There are three solutions we will **taste** and all are safe and not harmful to you. The **tastes** will all be very unique. Please remember, never **taste** an unknown solution outside of the Testing Laboratory, as it may hurt you. And remember, never try this at home. Investigators, we are ready for the next round of investigations to begin. Here we go. While you are not working with the investigation, please work and color your tongue diagram with the colored pencils provided.

I will come to you for tasting, so feel free to stay where you are. Remember to record where on your tongue the **taste** sensation is felt and keep it secret until everyone has had a chance to **taste**. Each solution is numbered, and I will tell you the number before we begin.

*Place the solution on each student's tongue and remind him or her to **taste** and record. Between each solution, allow students to mark on the handout where the **taste** was noticed the most. Also, be careful not to touch any students' tongues if using an eyedropper. Students should label 1,2,3 on PALS3.31.SG.AS.A. Distribute PALS3.31.SG.AS.A and colored pencils at this time.*



The investigations are now complete. Where did everyone note the first **taste** on their tongue?

Student responses should be: bottom edge of tongue.



Where did everyone note the second **taste** on their tongue?

Student responses should be: on either side of tongue.



Where did everyone note the third **taste** on their tongue?

Student responses should be: tip of tongue.



Wow. Investigators that was excellent! It is very interesting that **taste** buds for varying **taste** sensations are placed on different areas of our tongues – What a discovery! We now have completed two tests in the Testing Laboratories. Let's see what our final test will be.

OBJECTIVE 2. | Explain how the sense of touch reacts under different stimuli.



- A. Hot
- B. Room temperature
- C. Cold

Have three clear drinking glasses three-fourths full of water (one with cold, one with room temperature, and one with hot—not hot enough to hurt students) at the front of the room.



The next investigation we will be conducting here at Testing Laboratories will be to determine the temperature of water. Please observe these three glasses containing water. Each glass contains a different temperature of water. In this test, we will determine the temperature of the water using our index finger. The water in the glass will be either cold, room temperature or hot. Please do not worry; it will not be hot enough to hurt you. Who will be our first investigators?

Select three students to perform the investigation.



Thank you for volunteering. Each investigator will place their finger in each glass of water, but be sure not to announce what you feel. Let's begin!

Have volunteers place their fingers in each glass.



What temperature did you feel in the first glass?

Student responses will vary depending upon the glass.



What temperature did you feel in the second glass?

Student responses will vary depending upon the glass.



What temperature did you feel in the third glass?

Student responses will vary depending upon the glass.



Awesome job investigators. Please dry your hands and have a seat. Let's give our group of investigators a round of applause as they have a seat.

Did the investigators feel the same temperature in each glass? Why did our investigators feel different temperatures?



The differences between touches in the water changed as a result of the temperature of water. Based on surroundings, our sense of touch can change. There are many things in our life that may be different than what they first appear, and our sense of touch is no exception.



REVIEW / SUMMARY

Eye Witness News e-Moment®

Assign one person to be the news reporter and interview everyone in the group about one fact they learned today. If the group is large, create interviewing pairs.



Now to review; who will volunteer to be our news anchor? Thanks, now your job is to interview everyone in our group about what we discovered in the test laboratory today.

Allow the PALS to conduct a news show for a few minutes until most of the main points have been mentioned.



Today we have identified that salt is **tasted** on the bottom edge of our tongue, sour is located on either side of the tongue, and that we **taste** sweet things on the tip of our tongue. Testing Laboratories also determined that our sense of touching hot and cold items can be changed based on things in our surroundings. Thank you Investigators, for all the hard work while completing the tests and please remember, do not **taste** things or touch items that are unfamiliar. Enjoy the rest of your day and we will see you next time.

APPLICATION



Large Group Idea

Students can create a large-size tongue on construction paper and glue pictures of food on the area associated with its respected taste.



One-on-One Idea

Watch the YouTube video, 'Supertasters Taste Buds'.



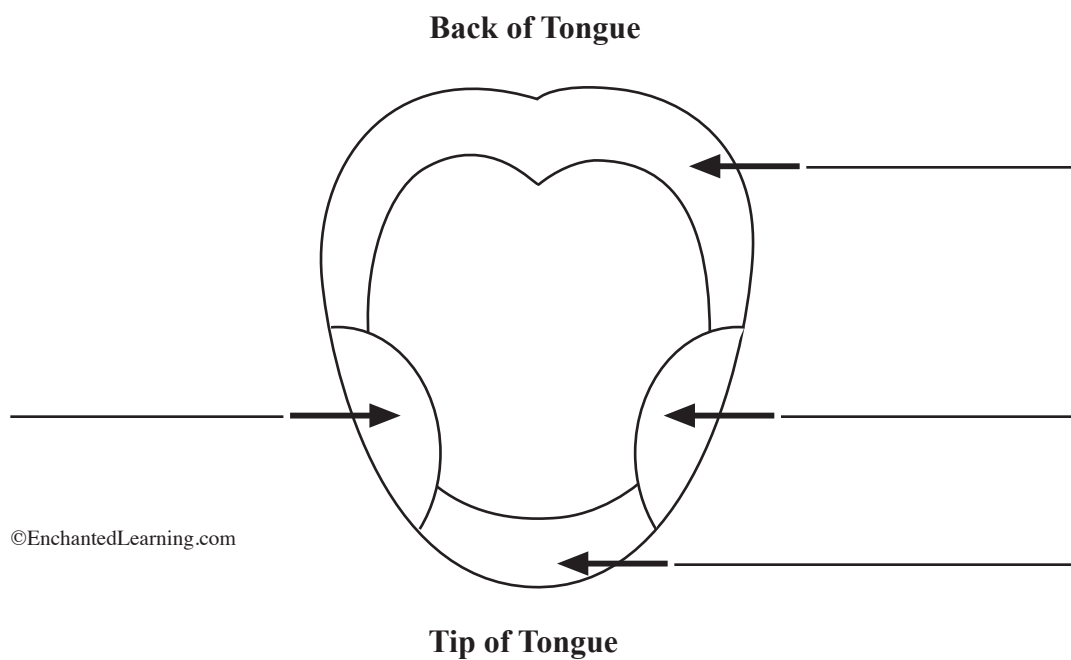
PALS3.31.SG.ASSESS.A | EVALUATION ANSWER KEY

1. False
2. False
3. False
4. False
5. True

PALS3.31.SG.AS.A

Name: _____

Directions: Write a 1, 2 or 3 in each of the blanks based upon where you taste each solution.



PALS3.31.SG.ASSESS.A

Name: _____

Directions: Please circle "A" for True or "B" for False

- | | | |
|-------|----|---|
| A - B | 1. | The taste of sweet is found on the back of the tongue. |
| A - B | 2. | Salty is tasted on the tip of the tongue. |
| A - B | 3. | Either side of the tongue tastes sour food. |
| A - B | 4. | Temperature of touch never changes. |
| A - B | 5. | Temperature can change based on different things around us. |