

# Eat a Rainbow

**Key Topics:** Diversity, Phytonutrients, Essential Nutrients, Health, Cooking

**Grade Levels:** K, 2, 4

**Inside or Outside**

## **Lesson Overview:**

In this lesson students will learn about the positive health effects that individual phytonutrients play for the bodies of plants and people and develop arguments for which color is the most important. The class will make a model showing which colors impart health benefits to which parts of our bodies. Students will discuss patterns of diversity in our world to explore the value of a varied diet. Then, students will make and taste a smoothie using produce from every color of the rainbow!

## **Suggested Time Allowance:**

Option 1 - Phytonutrient Activity: 30 minutes

Option 2 - Rainbow Smoothie Making and Tasting: 30 minutes

## **Suggested Activities & Learning Objectives by Grade:**

- K: Phytonutrient Activity, Rainbow Smoothie Making and Tasting
  - K-LS1-1 How do phytonutrients help plants and people survive?
- 2: Phytonutrient Activity, Rainbow Smoothie Making and Tasting
  - 2-PS1-1 Describe and classify different vegetables and their health benefits based on color.
- 4: Phytonutrient Activity, Rainbow Smoothie Making and Tasting
  - 4-LS1-1 What are the internal and external structures in plants and animals that phytonutrients support?
- 5: Phytonutrient Activity, Rainbow Smoothie Making and Tasting
  - 5-LS2-1 How does matter move from plants to humans when we eat a particular food?
- MS: Phytonutrients Activity, Rainbow Smoothie Making and Tasting
  - MS-LS1-7 What are some of the chemical reactions that make food usable in the body?



## **Essential Question(s) that Connect CCCs and SEPs:**

- What questions can I ask about diversity in our world? How is diversity important, and what problems would we face with a lack of diversity? How can I use this pattern of diversity to explore the value of different colors in our diet? ([Patterns](#); [Asking Questions and Defining Problems](#))
- What is already known about how this phytonutrient color is good for our bodies? How can I best communicate about this cause and effect relationship? ([Cause and Effect](#); [Obtaining, Evaluating, and Communicating Information](#))

- How can I make an effective argument from the evidence given to me that this phytonutrient color leads to a positive health effect in the body? ([Cause and Effect](#); [Engage in Argument from Evidence](#))
- How can I show how phytonutrients function inside our bodies through a model? ([Cause and Effect](#); [Developing and Using Models](#))

## **Materials:**

### Part 1 - Phytonutrient Activity

- Butcher paper long enough to trace a human body
- Markers
- Tape or magnets to display on whiteboard
- 1 copy of [rainbow cards](#)
- Fruits or vegetables from each color group (can substitute pictures if real fruit or vegetable isn't available)

### Part 2 - Rainbow Smoothie Making and Tasting (harvest available produce from school garden)

- Rainbow ingredient ideas
  - Red: strawberries, raspberries, beets
  - Orange: mango, oranges, carrots, pumpkin, persimmon
  - Yellow: banana, peaches
  - Green: spinach, kale, bok choy, cucumber
  - Blue: blueberries
  - Purple: plum, grapes, blackberries
  - OJ, apple juice, milk (dairy or nondairy, check about classroom allergies)
  - Yogurt
- Blender
- Smoothie tasting cups
- Ice if ingredients aren't frozen
- Compostable plastic gloves

## **EG Team Support Needed:**

- None

## **Prep:**

This entire lesson can take place outside with proper planning and set up! If you decide to do these activities outside, take into consideration where you will trace the body of a student on butcher paper (the ground is often bumpy outside). The students could be traced ahead of time, or you could sketch out the shape of a body on butcher paper ahead of time. Another option is tracing and coloring in the body in chalk on the blacktop. Location options for preparing smoothie: class could return to classroom to make the smoothie or you could prepare the smoothie ahead of time in the teachers lounge or cafeteria kitchen to bring outside.

- Take a walk through the school garden to know what is available for harvesting from each of the color groups (bring the rainbow cards for ideas)! If you are missing any colors, supplement from farmers market, the district culinary kitchen, the food bank, or a grocery store.

- Wash cooking surfaces well with soap and warm water, rinse, and dry.

### **Activity Procedure:**

#### **Engage:**

Begin with a classroom discussion in the seating area in your garden or in the classroom.



#### **Comprehension Check**

Write the following underlined question on the board, record answers, and discuss with the class:

What is diversity? The presence of differences.

What are some examples of diversity in the garden? What are some examples of diversity in our group?

Some plants have waxy leaves, and others have small hairs. Some plants and people are tall, while others are smaller. Flower shape, body shape, fruit color, skin color, eye color, and hair color are all different. We even have diversity in our thoughts and ideas.

What would our world be like without diversity? (Asking Questions and Defining Problems)

Do you think diversity is important to your diet? Why? How can I use this **pattern** of diversity to explore the value of different colors in our diet? (**Patterns**; Asking Questions and Defining Problems). Fruits and vegetables contain essential vitamins and minerals to help our bodies functions and promote health. The word essential means that our body cannot make these on our own, so therefore we need to eat them! Fruits and veggies also contain fiber which makes our gut healthy. How boring would it be if we only ate white food. The colors of fruits and vegetables come from phytonutrients. An easy way to remember this is that “phyto” nutrients help plants and people “fight” diseases. They also help boost our immune system and give us energy. Who here plays sports? The phytonutrients in fruits and vegetables do different things in our bodies to help us be the strongest versions of ourselves. The question is, which color is the most important for our health, and why?

(**Patterns**; Asking Questions and Defining Problems)

#### **Explore:**

To help us answer this question we are going to do a phytonutrient activity to help us learn how the different colors function in our bodies. Then we are going to make and taste a smoothie with fruits and vegetables of the most important color.

#### **Action:**

1. Put the butcher paper on the floor and ask a volunteer to lie on the paper. Trace the outline of the person lying down. Once the body is traced, put it up where everyone can see it.
2. Divide the class in half. Have students partner up with someone in their half of the class. Hand each partner pair in the first group a rainbow card. Hand each pair in the second half a whole fruit or vegetable or picture of one.



#### **Comprehension Check**

3. Explain that students' job is to group themselves so that each fruit or vegetable is matched with the correct rainbow card. Then they will prepare, as a team of 4, to convince the rest of the

class that their color is the most important one to eat (Cause and Effect; Obtaining, Evaluating, and Communicating Information; Engage in Argument from Evidence). The winning team will get to prepare the smoothie “cooking show style” for the rest of the class, so encourage them to form creative and convincing arguments. You can do an example with a color they aren’t using. *(I am going to talk to you today about green vegetables. Green vegetables like this kale are good for strong bones and teeth. And you need teeth to eat all the other vegetables! So eat your greens!)*

4. Give the groups 5-10 minutes to prepare their arguments.
5. Have each group share why they think their vegetable is the most important for us to eat.

**Explain:**

After each short presentation, summarize why the color is good for you by coloring in parts of the body with that color. *(Okay, green vegetables can make your bones and teeth strong, so I’ll draw in some bones and teeth with green marker).* Allow students to help you come up with creative ways to represent each fact. For example, you might draw a shield in yellow or orange to represent a strong immune system. (Cause and Effect; Developing and Using Models) So, which color is the most important to eat? If I want to stay healthy, which color should I eat? (All of them! We should eat a rainbow!)

**Elaborate:**

We are now moving on to make our rainbow smoothie! Review with students what you harvested from their garden, and what other ingredients will be added into their smoothie. Have the winning team come help you prepare the smoothie. Remember to have them wash their hands and wear compostable plastic gloves. Give each student a small task such as peel the banana and break it into small pieces, measure the berries, tear the kale, pour the liquid, etc. Review tasting etiquette: Use 5 senses while waiting for everyone to receive their taste; lizard lick and rabbit nibbles if nervous; don’t yuck my yum. Blend, serve, and enjoy!

**Evaluation:**



*Comprehension  
Check*

Take a hand raising survey of who loved, liked, and tried their rainbow smoothie. Write the smoothie ingredients on your graphic organizer and fill out as a class: (Patterns; Cause and Effect; Obtaining, Evaluating, and Communicating Information)

<u>Fruit or Vegetable:</u>	<u>Color and Function :</u>
Strawberry	Red; heart and skin
Banana	_____
Mango	_____
Kale	_____
Blueberry	_____
Grapes	_____

Also, refer back to the Learning Objectives for your grade level and ensure that they have been met by asking the given learning objective question.

### **Extension Activities:**

- Have students write down what they ate yesterday and list the colors they ate in each meal. Have students reflect on their lists and ask them to think of ways they could incorporate fruits and vegetables with the missing colors. Students can use a journal sheet like this: [Garden Journaling: Eat a Rainbow](#)
- Class can adopt a space in the garden (bed, row) and plant a rainbow garden.
- [People and Plants need Nutrients Lesson](#)

### **Tips and Caveats:**

#### **Adaptations for K-2**

Rather than dividing the class in half to distribute produce and rainbow cards, pass out many different fresh fruits and vegetables to students and have them find others with the same color. Read outloud that you are a “yellow phytonutrient” and your purpose, and let the kids come up in front of the class to act out that role (flexing for strong muscles, smiling for healthy teeth, etc.)

Still color in the model with student input.

Provide more assistance to the younger chefs when making the smoothie.

### **Cited Curriculum:**

LifeLab - The Growing Classroom: [Eat a Rainbow](#) and [Rainbow Smoothie](#)