Lesson #6  Rainbow of Color

GUIDING QUESTIONS AND CONCEPTS

1. It is important to eat a variety of fruits and vegetables for maximum health.
   • What specific health benefits do I receive from fruits and vegetables?

2. There are creative and tasty ways to include fruits and vegetables at every meal.
   • How can I include more fruits and vegetables into my daily diet?

LESSON OUTLINE

1. Warm-Up/Reflect (2 min.)
2. MyPlate Review Discussion (5 min.)
3. Vitamins & Minerals Chart Activity (7 min.)
4. Rainbow of Color Salad Activity (12 min.)
5. Wrap-Up (1 min.)

PHS OVERARCHING ESSENTIAL QUESTIONS

• What does it mean to eat healthfully and be physically active, and why is it important?
• How do culture, experience and environment affect one’s health?
• What goals do I have to improve my health and the health of those around me?

LESSON GOALS

Students will be able to...

1. Understand that a variety of fruits and vegetables provide health benefits.

2. Understand that fruits and vegetables provide vitamins and minerals.

3. Define phytochemical and locavore.

VOCABULARY

vitamin, mineral, iron, phytochemical, locavore

LESSON PREP

• Write vocabulary words on board
• Write vitamin and mineral chart on board
• Review Nutrition 101

MATERIALS

PROPS:
• Apple corer
• Recyclable bag
• Hand Sanitizer

DISPOSABLES:
• Plastic gloves (24)
• Plastic knives (10)
• Plastic forks (1/student)
• Paper food trays (1/student)
• 1 2-gallon plastic bag
• Paper towel
• Paper plates (10)
• Cleaning wipes
• Salad Ingredients: spinach, shredded carrots, apples, yellow raisins, sunflower seeds, dried cherries, cranberries or blueberries, red pepper, lemon
• Tupperware w/honey and oil

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In this lesson, students will learn why fruits and vegetables are important for their bodies and why it is important to include a variety of produce in their diets. Students will decode difficult vocabulary words like phytochemical and locavore using Greek and Latin affixes and roots as clues. The lesson culminates with a cooking demonstration to show students how they might create their own nutrient-dense meals that feature fruits and vegetables.

CCSS.ELA-Literacy.L.6.4b Use common, grade-appropriate Greek or Latin affixes and roots as clues to the meaning of a word (e.g., audience, auditory, audible).

BACKGROUND INFORMATION

Most Americans do not receive the daily suggested amount of fruits and vegetables, and need assistance finding creative ways to include the proper amount into their diet. According to the recommendations from the USDA, middle school aged youth should eat 1.5 cups of fruit and 2.5 cups of vegetables each day. This means that half of MyPlate should be made up of fruits and vegetables. This lesson encourages youth to eat many different colors of fruits and vegetables in order to ensure that they receive the full range of essential vitamins and minerals. It is important to demonstrate that eating fruits and vegetables can be easy, fun, and delicious.

RESOURCES

1. Choose MyPlate
   www.choosemyplate.gov/

2. Fruits & Veggies– More Matters
   www.fruitsandveggiesmorematters.org

3. Harvest of the Month
   www.harvestofthemonth.com

4. Nutrition 101

LESSON EXTENSIONS

Available at the end of the lesson:

1. Vitamin Chain Activity (15 min.)
2. Rainbow of Color Discussion (5 min.)
3. Vitamin Discussion Discussion (5 min.)
Lesson #6  Rainbow of Color

LESSON OUTLINE

WARM-UP/REFLECT (2 min.)
- Welcome, Wellness Warriors! Last time we met we discussed our get be active every day step to focus on for the week. Who can tell me what that step was?
  - Answer: See Healthy Habits activity from Lesson 1, and the small step that was set for be active every day.

- Stand up and shoot hoops if you achieved our class step around be active every day. Allow students to shoot hoops for 15 seconds.

- Everyone else stand up and join in. Let entire class shoot hoops for 30 seconds.

- Let’s take our seats. It seems like many of you are working hard on our steps to reach the PHS goals. We are going to talk about another small step at the end of today’s class, and I hope you continue to work towards achieving each one.

- Who can tell me what we talked about last time we met?
  - Answer: the heart is a muscle that we can make stronger through exercise to keep us healthy; heart rate measures how fast our heart beats; the faster our heart beats the stronger we make our heart, get 30 minutes of activity per day; heart rate is a measurement of aerobic activity

- Give me a thumb’s up if you shared something you learned last lesson with someone. Allow students to show thumbs up.
  - This week we are going to revisit our discussion on MyPlate, and focus on the importance of fruits and vegetables. We will also discuss how to include a rainbow of color when choosing what we eat.

MYPLATE REVIEW  Discussion (5 min.)
CCSS.ELA-Literacy.L.6.4b

- Think back to our discussion a few weeks ago about MyPlate. How much of MyPlate is fruits and vegetables?
  - Answer: Half of the food you eat in a day should be fruits and vegetables.

- Why is it important to eat fruits and vegetables?
Lesson #6  Rainbow of Color

LESSON OUTLINE

- Answer: good for our body, they contain vitamins and minerals, make us strong, give us nutrients
- Who can tell me what is a vitamin or mineral?

**Vitamins and Minerals**: substances that our body needs in order to function, that it cannot make and we have to get from our environment.

- Vitamin C is an example of a vitamin that many of you may have heard of before.

- Raise your hand if you have ever heard of phytochemicals.

- Let’s try to figure out what the word means by breaking it down. Does anyone recognize a part of the word **phytochemical** that might help us figure out what it means?

Students will most likely answer “chemical”—circle the word **chemical**.

- Does anyone know what the prefix phyto means? *Wait for student response.* Phyto is a Greek word that means plant. So if I put the two words together what do I get?
  
  o Answer: Plant chemicals

**Phytochemicals**: little chemical substances found in plants that help protect our bodies from disease. There are thousands of different phytochemicals, and the only way to get them is by eating a variety of fruits, vegetables, and whole grains.

- One piece of fruit may contain up to 900 different phytochemicals. In order to get all the thousands of phytochemicals we need, we have to choose a variety of different fruits and vegetables.

- The brighter the color, and fresher the produce, the more phytochemicals.

**VITAMINS AND MINERALS CHART** *Activity (7 min.)*

*In this section you will complete the chart with students, and help them to understand the health benefits of the different fruits and vegetables they will be trying in the next section. Write out chart prior to lesson starting with all words in bold filled in. For additional information on vitamins and minerals, please see Nutrition 101 located in your binder.*
Lesson #6 Rainbow of Color

LESSON OUTLINE

<table>
<thead>
<tr>
<th>Fruit or Vegetable</th>
<th>Vitamin or Mineral</th>
<th>Health Benefit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red Bell Peppers</td>
<td>Vitamin C</td>
<td>Helps heal wounds</td>
</tr>
<tr>
<td>Carrots</td>
<td>Vitamin A</td>
<td>Helps you see</td>
</tr>
<tr>
<td>Spinach</td>
<td>Iron</td>
<td>Makes you strong</td>
</tr>
</tbody>
</table>

- What fruit or vegetable provides us with Vitamin C?
  - Students may respond with oranges.
  - Answer: Oranges are a great example; red bell peppers are also a great source of Vitamin C. Other sources of Vitamin C include: berries, kale, broccoli, cantaloupe, tomatoes, peas, and collards.
  
  *Fill in red bell peppers on chart.*

- What does Vitamin C do for our body?
  - Answer: Helps heal wounds.
  
  *Fill in helps heal wounds on chart.*

- Can anyone tell us what carrots do for your body?
  - Answer: Helps us see.
  
  *Fill in helps you see on chart.*

- What vitamin is in carrots that helps us see?
  - Answer: Vitamin A
  - Other foods rich in vitamin A include leafy greens, sweet potatoes, asparagus, peaches, broccoli, apricots, and garlic.

  *Fill in vitamin A on chart.*

- Does anyone know a fruit or vegetable that provides our body with the mineral iron and makes us strong? (Hint: If students don’t come up with spinach, ask them to think about Popeye.)
  - Answer: Spinach, other foods rich in iron include: string beans, collards, broccoli, strawberries, watermelon, prunes, figs, raisins, and artichokes.

  *Iron: a mineral that helps to carry oxygen through the body.*

  *Fill in spinach on chart.*
As this chart shows, we have three different fruits or vegetables, vitamins and minerals, and health benefits. The important thing to note is that the key is variety. The more variety in our fruit and vegetable choices, the more vitamins, minerals, and health benefits we are getting. Each color includes its unique combination of vitamins and minerals. Red, orange, and dark leafy green vegetables are among the most vitamin and mineral rich foods available.

Now we are going to use these three fruits and vegetables, in addition to others, to create a rainbow super salad.

**Rainbow of Color Salad** Activity (12 min.)

CCSS ELA-Literacy.L.6.4b

(Materials: salad ingredients, plastic gloves, cleansing wipes, plastic knives, paper towel, paper food trays, forks, apple corer, paper plates, 2-gallon bag, Tupperware with honey and oil, hand sanitizer)

Does anyone have any food allergies? The items in today's salad include: spinach, shredded carrots, apples, yellow raisins, sunflower seeds, dried cherries, cranberries or blueberries, red pepper, honey, lemon, olive oil. If anyone has any allergies to an ingredient, remove a serving of salad from the bag without specified ingredient before adding remaining ingredient(s).

Pass around bottle of hand sanitizer, and have all students clean their hands.

Ask for student volunteers.

Give each student an ingredient to add to the salad. The goal is to involve all students. Each item should be added to the bag separately so students can visually see all the colors of the rainbow being added into the salad. A few different students can cut up the apple and red pepper. You will also need two students to add the salad dressing to each bag, and another two to shake up the salad bag to mix.

- Items to cut: apple, red pepper
- Items to squeeze and mix together: lemon, olive oil, and honey
- Items to add to salad: dried cherries, cranberries, or blueberries, sunflower seeds, spinach, shredded carrots, yellow raisins

Have students who are handling the apple and red pepper wear plastic gloves. They should use paper plates as cutting boards and dice the items into small (1cm x 1 cm) pieces. Instructor should save one pair of gloves to serve salad.
Divide ingredients into two-gallon size bag; let students seal and shake to mix ingredients together. 

Use a gloved hand to distribute salad into bowls and pass out to students with forks for taste testing.

- As with all things in Project Healthy Schools, we ask all students to give the rainbow super salad a try. You don’t have to eat it all, but we encourage you to give it a taste.

**While students are eating the salad, ask some of the following questions:**
- Raise your hand if you eat a fruit or vegetable at breakfast, lunch or dinner.
- Raise your hand if you sampled a new fruit or vegetable today.

**Ask students to raise hands to give answers.**

- What is your favorite fruit or vegetable?
- What are some creative ways to add fruits or vegetables to your meals?
  - Answers: smoothies, vegetable stir fries, kabobs
- Raise your hand if you have visited a farmer’s market or have a garden at home.
- Why is it important to eat food that is in season or locally grown?
  - Answer: fuel costs, produce more fresh, supports local farmers
- Has anyone heard of the word locavore before?
- Just like we broke down the word phytochemical, let’s try to figure out what locavore means. *Circle “loca” and “vore”*
- Let’s start with “vore” what other words do you know that end in “vore?” Think back to your science class.
  - Answers: carnivore, herbivore, omnivore
- What do those words mean?
  - Answer: carnivore means animals that eat meat and herbivore means animals that eat plants.
Lesson #6  Rainbow of Color

LESSON OUTLINE

- So what does vore mean then?
  - Answer: to eat

- Now let’s look at the prefix “loca.” What word does it remind you of?
  - Answer: local (this also may remind students of other words like locomotive, location—ask them what these words mean and have in common)

- Tell students to put the two words together. What do they mean together?

  **Locavore:** To eat food from a near-by location.

- Locavores try to eat food within a 100-mile radius of their homes.

- Why is it important to buy and eat locally grown food items?
  - Allow students to explore this topic as they clean up.

  *Clean up. Scrape all leftovers in garbage or offer remaining salad to staff. If sink is available, wash and dry items.*

  *Take a “thumb poll” and ask students how they like the rainbow super salad (up for liked it, sideways for kind of liked it, down for disliked it).*

**WRAP-UP (1 min.)**

- What is something you learned today that you will take home and share with others?
  - Answer: a variety of fruits and vegetables provide a health benefits; fruits and vegetables give us important vitamins and minerals; try new foods; importance of including a rainbow of color

- This week we are going to focus on our small step towards eating more fruits and vegetables. What is the small step our class set?
  - Answer: *See Healthy Habits activity from Lesson 1, and the small step that was set for eating more fruits and vegetables.*

- Good luck, Wellness Warriors! We will check in next time on our progress.
VITAMIN CHAIN Activity (15 min.)
(Materials: vitamin chain pictures, pipe cleaners)
Divide students into groups of four and give them each three vitamin descriptions, a set of vitamin effect pictures, food pictures, and 9 pipe cleaners.

- We need to eat a wide variety of fruits and vegetables to get the vitamins we need. In PHS we like to say Eat The Rainbow.

- In your groups you have three vitamin descriptions. Read the descriptions and match your vitamin to the foods it is found in and the effect it has on our bodies. Once you have decided which images your vitamins are related to, link them together using the pipe cleaners.
  - Note: The students will use the pipe cleaners to link the different pictures together. Each image and description has a hole on each side to thread a pipe cleaner through. Every chain should contain one description, one vitamin effect, one food picture and two pipe cleaners.

Give students about 10 minutes to complete. Allow each group to share one of their chains with the class.

RAINBOW OF COLOR Discussion (5 min.)
Write ROYGBV on the board.

- Who can tell me a fruit or vegetable that is one of the different colors of the rainbow?
  - Answer: Red - red pepper, red apple, Orange - orange, carrot, etc.

Try to get students to brainstorm a variety of different fruits and vegetables in all the different colors of the rainbow.

VITAMIN DISCUSSION Discussion (5 min.)
Facilitate a discussion using the “Vitamin and Mineral Information Sheet” located in your binder about different vitamins and minerals and the health benefits each provides to us. It is important to highlight that we are able to get more vitamins and minerals, but including a variety of different fruits and vegetables because they each provide us with something different.