

# *Healthy Eating on a Budget*

## Nutrition

PwC's *Earn Your Future*<sup>™</sup> Curriculum

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## Introduction

In 2012, more than one third of children and adolescents were either overweight or obese<sup>1</sup>. Children who are obese are more likely to have high cholesterol or high blood pressure, which can lead to heart disease. Obese teens are also more likely to have pre-diabetes, a condition that increases their chances of developing diabetes as an adult. Children who are obese are also likely to be obese as adults, putting them at risk for problems such as type 2 diabetes, heart disease, stroke, cancer, and osteoarthritis<sup>2</sup>.

Fortunately, there's good news. Healthy lifestyle habits, which include healthy eating and physical exercise, can lower these risks. The key is starting early.

The enclosed lesson plan is designed to increase students' awareness about healthy eating choices that include colorful fruits and vegetables. Your knowledge and real-life examples, coupled with this one-hour lesson plan, will fill a critical gap in our current education system and better prepare the next generation to make healthier eating choices and be productive citizens.

## Lesson description

Students will learn about the importance of eating a variety of fruits and vegetables each day. Together you will explore the nutrients in fruits and vegetables of different colors and have the option to do a related art activity if time and supplies allow. Students then will learn the difference between whole and processed foods, which are healthier, and how to budget in order to make the best nutrition choices!

## Grade(s)

2<sup>nd</sup> – 4<sup>th</sup>

## Lesson time

60 min

## Pre-visit prep

- Review the 5-minute prep to familiarize yourself with the lesson topic vocabulary
- Review the handouts to familiarize yourself with their structure and requirements
- Obtain lesson materials listed under the "Materials" section below

## Student learning objectives

Students will:

- State the importance of eating a variety of different-colored fruits and vegetables
- Share that the recommended daily number of servings of fruits and vegetables is 5
- Explain the difference between whole and processed foods and choose the healthier option
- Recognize that whole foods are usually both cheaper and healthier
- Use simple addition to budget for food shopping with the help of instructors

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<sup>1</sup> Ogden CL, Carroll MD, Kit BK, Flegal KM. Prevalence of childhood and adult obesity in the United States, 2011-2012. *Journal of the American Medical Association* 2014;311(8):806-814.

<sup>2</sup> Centers for Disease Control and Prevention. (2015). *Adolescent and School Health: Childhood Obesity Facts*. Retrieved from: <http://www.cdc.gov/healthyyouth/obesity/facts.htm>

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## Materials

For up to 30 students, obtain ahead of time:

### Class/group

- Pre-prepared chart paper or chalk/white/smart board with the following color headings: “RED,” “ORANGE,” “YELLOW & WHITE,” “GREEN,” and “BLUE & PURPLE.”
- Pre-cut color pictures of fruits and vegetables of all different colors (optional)
- Glue sticks (optional)
- Markers (optional)
- Printed Food Item Cards (optional)

### Student (one per student)

- Handout A: “Eat the Rainbow”
- Handout B: Fruit and Veggie Rainbow Collage (optional)

# 5 minute prep

## Background

According to the CDC, the rate of obesity among the nation’s young people (ages 2-19) is at about 17%<sup>3</sup>. We see disparities along lines of race as rates of obesity in children and adolescents are lower among young Caucasians and higher in communities of color. We also see an increased rate of obesity as age increases<sup>4</sup>.

Health risks to young people may include high blood pressure, high cholesterol, type 2 diabetes, asthma and other breathing problems, joint problems, gastro-esophageal reflux, and social and psychological problems. Obese and overweight young people are also more likely to grow into obese or overweight adults with greater risks of a number of chronic health problems and disease such as heart disease, type 2 diabetes, and some cancers<sup>5</sup>.

Nutrition and financial education are important tools to help combat childhood obesity and potential for related health problems. The USDA’s Food and Nutrition Service found that nutrition education interventions can have a significant impact on dietary habits<sup>5</sup>. The CDC found higher rates of obesity among young people living in low-income households and with adult heads of household with lower levels of education<sup>3</sup>. The Food Research and Action Center found that low-income individuals living in poverty and those with low access to food are especially vulnerable to obesity<sup>6</sup>. Therefore, increased financial literacy and education may contribute to the fight against obesity, as well.

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<sup>3</sup> Centers for Disease Control and Prevention. (2015). *Division of Nutrition, Physical Activity, and Obesity: Childhood Obesity Facts*. <http://www.cdc.gov/obesity/data/childhood.html>

<sup>4</sup> Grills, C., Villanueva, S., Subica, A., & Douglas, J. (2014). “Communities Creating Health Environments: Improving access to healthy foods and safe places to play in communities of color.” *Preventive Medicine*, 69, S117-S119.

<sup>5</sup> USDA Food and Nutrition Services. (2010). *Nutrition Education and Promotion: The Role of FNS in Helping Low-Income Families Make Healthier Eating and Lifestyle Choices*. <http://www.fns.usda.gov/sites/default/files/NutritionEdRTC.pdf>

<sup>6</sup> Food and Research Action Center. (2010). *Why Low-Income and Food Insecure People are Vulnerable to Overweight and Obesity*. <http://frac.org/initiatives/hunger-and-obesity/why-are-low-income-and-food-insecure-people-vulnerable-to-obesity/>

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## Vocabulary

- **Fruit:** edible part of the plant, which contains seeds
- **Vegetable:** any edible part of a plant (technically this includes “fruits,” but we distinguish between fruits and vegetables, vegetables more often being the root, stem, leaf, or flower of the plant)
- **Nutrients:** components found in food including macronutrients (protein, carbohydrates, and fats) and micronutrients (vitamins and minerals). Nutrients are necessary to build structure, grow, and survive
- **Vitamins:** organic components in food needed in small amounts for growth and maintaining good health, such as: vitamins A, C, D, E, K, B<sub>12</sub>, B<sub>6</sub>, folate, niacin, thiamin, riboflavin, and pantothenic acid
- **Mineral:** a naturally occurring, inorganic substance often found in food, some of which are essential in small amounts for growth and health maintenance, such as: iron, calcium, magnesium, phosphate, sodium, potassium, chloride, and zinc
- **Antioxidant:** chemical components often found in fruits and vegetables that help protect the body from damage. Certain vitamins act as antioxidants
- **Phytochemical:** active chemical components that are not considered nutrients because they have not yet been proven to be necessary for survival, but have positive health benefits and are often protective
- **Serving:** the recommended portion of food to be eaten. For fruits and vegetables it is usually one half to one cup
- **Whole foods:** foods that come from a natural source (plant or animal), found in a form that closely resembles how they are found in nature, with little to no processing, no added ingredients, and usually very little packaging. Examples include all raw fruits and vegetables, whole grains, fresh cuts of meat with no added ingredients (i.e. breading, oil), and milk
- **Processed food:** food that has been changed from its natural form. Often processed foods have lost some of their natural nutrient value and ingredients have been added such as fat, salt and/or sugar to improve taste and preserve the processed food. Processed foods usually have long ingredient lists many of which are also processed foods, lots of packaging, and are less healthy than their whole food counter parts. Examples include: most condiments, breakfast cereals, cheese, chips, soda, pasta, cookies, cakes, etc.
- **Budget:** a plan for using money

## Sources

Background information and vocabulary adaptations based on information from:

- Centers for Disease Control and Prevention (CDC) - <http://www.cdc.gov/obesity/childhood/index.html>
- Food and Nutrition Service (FNS) Report to Congress - <http://www.fns.usda.gov/sites/default/files/NutritionEdRTC.pdf>
- Food Research and Action Center (FRAC) - <http://frac.org/initiatives/hunger-and-obesity/why-are-low-income-and-food-insecure-people-vulnerable-to-obesity/>
- Medical Dictionary: <http://medical-dictionary.thefreedictionary.com/>
- Academy of Nutrition and Dietetics (AND): <http://www.eatright.org/>

## Pre and post assessments

Before beginning the lesson, facilitators should introduce themselves and **distribute** the Pre-Assessment to the students. If time allows, consider conducting a mini icebreaker before the Pre-Assessment.

Note: It is highly recommended that facilitators read the questions aloud to the students and encourage students to select answers as they move through the questions. Reassure the students that the assessments are not graded tests or quizzes, and that they do **not** need to put their names on the assessments. The assessments are a tool to measure classroom comprehension of a given module and gauge effectiveness of instructor delivery.

**Collect the Pre-Assessments** once completed.

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Facilitators should teach the lesson to the students and administer and collect the Post-Assessment at the end of class, **keeping in mind the same considerations outlined above**. Again, students do **not** need to put their names on Post-Assessments.

## **Lesson activities**

### **Greeting**

**Say:** Hello everyone. My name is \_\_\_\_\_. I am excited about being here today because we are going to talk about something that everyone loves - FOOD! Eating right and building healthy habits are an important way to be the best you possible!

**Ask:** What does eating right mean to you?

### **Activity A – Fruit and Veggies: Envision a Healthier You (10 minutes)**

**Say:** One part of eating right is eating a variety of all different types of fruits and vegetables. They are filled with important nutrients such as vitamins, like vitamin A which makes your eyes strong or Vitamin C, which helps you fight colds and flus, and minerals like calcium which makes your bones and teeth strong, or iron, which is an important part of your blood. All of these vitamins and minerals help you to be stronger, smarter, and more successful at the activities you like to do.

**Ask:** What are some of your favorite fruits and vegetables?

**Select** a few students to share.

**Ask:** What are some of your favorite activities?

**Select** a few students to share.

**Say:** Wow, you all enjoy a wide variety of fruits and veggies and activities! We are going to use our imaginations to envision how fruits and vegetables help our bodies and us.

**Lead** students in a brief relaxation activity such as shaking out the wiggles or taking deep breaths. Have them sit down and close their eyes.

**Say:** I want you to imagine yourself doing your favorite activity, like dancing, riding your bike, playing with your dog, doing math homework, or playing basketball (reference activities that students mentioned earlier). Now, picture yourself taking a big bite of your favorite fruit or vegetable like an apple, carrot, or broccoli *\*crunch\** (reference fruits and vegetables students mentioned earlier). Imagine all the important, healthy vitamins and minerals traveling all throughout your body from the top of your brain all the way to your fingertips and toes, making you strong and smart and healthy. Now, imagine yourself being extra successful at your activity. Did you make that extra goal? Did you nail your dance performance? Did you run an extra mile with your dog? Did you ace your test or beat the next level on your favorite game? Now open your eyes and raise your hand if you'd like to share what you saw.

**Select** a few students to share what they saw in their mind's eye. Prompt them to share what activity they were doing and what fruit or vegetable they ate. Discuss together how and why vegetables/fruits are important to the student's respective activity.

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## Activity B – Fruit and Veggies: Eat the Rainbow (15 minutes)

### Materials

#### Class/Group

- Pre-prepared chart paper or chalk/white/smart board with the following color headings: “RED,” “ORANGE,” “YELLOW & WHITE”, “GREEN”, and “BLUE & PURPLE.”

#### Students (one per student)

- Handout A: “Eat the Rainbow”

**Ask:** How many servings of fruits and vegetables do you think we need to eat a day?

**Select** a few students to share.

**Explain** that the recommended minimum is to eat at least 5 servings a day to be healthy. Explain that 1 serving is about 1 cup or the size of their fist, so eating just 1 or 2 strawberries isn’t enough but often a piece of fruit like an orange or apple counts as one serving.

**Say:** That means we need to try to eat one serving of fruits or vegetables with each meal. We should also try to eat fruits or vegetables as a snack, instead of an unhealthy snack.

**Ask:** Who thinks they are getting 5 a day right now?

**Say:** A good way to make sure you get to at least 5 servings a day is to eat fruits and vegetables that are all different colors of the rainbow. The special healthy benefits of the fruits and vegetables come from their color, and each color helps our body in different ways. Carrots and other orange fruits and vegetables are full of Vitamin A and they help our eyes to be healthy and strong! Green vegetables like broccoli, spinach, and kale have tons of calcium that help strengthen our teeth and bones!

**Ask:** Who can raise their hand and tell me a fruit or vegetable that is the color red? Red fruits and vegetables are good for your heart.

**Select** students to share.

**Write** down their responses on pre-prepared chart paper or chalk/white/smart board under the heading “RED.”

**Ask:** Who can raise their hand and tell me a fruit or vegetable that is the color orange? Orange fruits and vegetables are good for your eyes.

**Repeat** this question until you have covered the following colors:

- RED - good for your heart and stomach
- ORANGE - good for your eyes
- YELLOW & WHITE - good for your brain
- GREEN - good for your bones and teeth
- BLUE & PURPLE - good for your memory

**Write** responses under the correct color heading on pre-prepped chart paper or chalk/white/smart board.

**Say:** Wow! Look at the wide variety of options you have to choose from. If you eat one serving of fruit or vegetable from each color category you will have eaten enough to be healthy for that day.

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**Ask:** How many servings should we eat a day? (5) And how much is a serving? (The size of your fist)

**Distribute** the Eat the Rainbow handout (Handout A).

## *Optional Art Activity – Fruit and Veggie Rainbow Collage*

### Materials

#### *Class/Group*

- Handout B: Fruit and Veggie Rainbow Collage
- Pre-cut color pictures of fruits and vegetables of all different colors
- Glue sticks
- Markers

**Organize** students into small groups to share glue sticks, a pile of fruit and vegetable pictures, and markers.

**Say:** We're going to use all these beautiful pictures of fruits and vegetables to make a rainbow collage to take home. You can put it on your fridge or somewhere else in your kitchen or close to where you eat to remind yourself to "Eat the Rainbow" when it comes to fruits and vegetables.

**Distribute** the Rainbow Collage handout (Handout B). Help students write their names in the blank. Then, allow students to create their own Fruit and Veggie Rainbow collage.

## *Activity C – Whole vs. Processed Foods (10 minutes)*

### Materials

#### *Class/Group*

- Printed Food Item Cards (optional)

**Say:** Now we know the importance of eating 5 servings of fruits and vegetables in order to eat right. Another way to make sure that we're eating right is to eat more whole foods and less processed foods. Whole foods are things that come directly from nature and haven't been changed into another food product. Examples of whole foods are strawberries, broccoli, meat from a chicken, or milk from a cow. Processed foods are foods that have been changed and often mixed with other ingredients such as sugar, salt, and fat. Some examples of processed foods are potato chips, hot dogs, or candy bars.

**Ask:** Which do you think is healthier, whole foods or processed foods?

**Display** matching whole and processed Food Item Cards or draw examples on the board. For example apples and apple pie.

**Ask:** Which one is the whole food item? Which one is the processed food item? How do you know? Which is healthier?

**Repeat** this process with a few different matched pairs of whole and processed food items. If the students are having trouble distinguishing between process and whole foods, a good trick is to ask students "Is there an apple pie tree?" Help them to realize that processed foods don't come directly from nature in their form, however whole foods come straight from plants and animals.

**Ask:** Which foods should we be eating more of? Which foods should we be eating less of? Why?



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## Activity D - Food Finance: The Smart Choice (10 minutes)

**Say:** Imagine you have a dollar. With that dollar you could buy three apples or you could buy one piece of apple pie. Which food item is more expensive?

**Use** the Food Item Cards or recreate similar images on the board to compare the value of the whole and processed food pairs.

**Ask:** In general which is more expensive: whole foods or processed foods? Why do you think that is?

**Explain** that processed foods can be more expensive because of the extra ingredients, processing, and packaging that go into making them.

**Ask:** If you are at the supermarket, which would you choose? Think about price, taste, and healthfulness. Explain why.

**Select** a few students to share.

## Activity E - Budget for Health (10 minutes)

**Say:** Let's pretend we have \$5 to spend on food today. In order to make sure that you're able to buy the food you want and need with the money you have, you must have a food budget: a plan for how to use your money to buy enough food. What food items can we buy with our \$5?

**Help** students choose 5 food items from the previously discussed whole and processed foods using the Food Item Cards or images on the board. Play around with different combinations, first asking students to buy only processed food, then only whole foods. Compare the quantity and value of the different foods. Show them that more often than not they can get a greater quantity of food if they buy more whole food items.

**Ask:** Has anyone helped to make a grocery shopping list before?

**Discuss** how planning meals ahead of time, checking to see what you already have in the house, making lists, not going shopping on an empty stomach, and setting limits on prices can help you follow your food budget.

## Closing Reflections (2 minutes)

**Say:** Today we learned about different colored fruits and vegetables, how they keep us healthy, how many servings we should be eating every day, and how they can help us succeed in everything we do. We also learned about which types of food are healthier and which have more value. In your opinion, what is the best way to spread the word about how to eat healthy with fruits and vegetables so that more people can be informed and aware? Would you like to share what we learned today in class with someone? Who would that someone be?

**Allow** a minute for students to share.

**Say:** Thank you for allowing me to spend time with you today. Gaining knowledge and making wise eating decisions is the best way to stay healthy. I enjoyed working with you all today!

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## ***Evaluation/Assessment of Student Learning***

### ***During lesson/in-class***

- Students participate in a Nutrition Vocabulary Game
- Students create posters about eating healthier with different colored fruits and vegetables

### ***Ideas for post-lesson assessments***

- Students respond more thoroughly to the closing prompt and explain how to make the public more aware of healthier eating.

## ***Extensions/Enrichment***

- Teachers can have students play games about fruits and vegetables at <http://www.foodchamps.org/index.php?from=1&karakter=3&poz=b5d33d&bojapoz=&ime=m>.
- Students can discuss healthy eating choices with their parents/guardians and write a short essay on their family's experiences and opinions, as well as what their family does to eat healthy fruits and vegetables.