

LiveWell Kids Garden and Nutrition Program

Lesson 1: The Importance of Water for People and Plants

OBJECTIVES

By the end of this lesson, students will:

- Appreciate that all living things, including plants, animals and humans, need water to survive.
- Understand how plants utilize water.
- Understand the benefits of drinking water compared to drinking sugary drinks.
- Identify ways in which our body loses water.
- Become familiar with different ways to add water to our daily diet.
- Increase ability to make healthy food choices by knowing how to interpret the Nutrition Facts Label.
- Recognize the benefit of eating fruits and vegetables in various colors.
- Increase daily consumption and willingness to try new fruits and vegetables.

SUPPLIES

- Supplies to bring from the garden shed to the garden (the asterisk will be referred to in the Set-Up section):
 - o 6 Laminates
 - Benefits of Drinking Water
 - Recipes to Make Water More Fun
 - Eat Your Water
 - Water Tracker
 - Nutrition Facts: Sugar (Sports Drink & Cola)
 - Benefits of Eating from the Rainbow
 - 1 drinking glass (8-ounce)
- Supplies to <u>bring from the classroom</u> to the garden *arrange with the teacher ahead of time*:
 - o Paper one piece per student
 - Writing tools such as crayons, colored pencils, markers

PREPARATION

- Refer to the "Background and Preparation" document for details about preparing for the lesson one week prior and the day of. It is posted on the website and the inside of the shed door.
- As the "Background and Preparation" states, allow **30 minutes** to prepare.



INTRODUCTION & MINDFUL BREATHING (1 MINUTE)

- Introduce yourself and other volunteers.
- Guide students through a mindful breathing exercise.
- Explain that in this first lesson they will harvest and prepare a healthy dish while also learning about nutrition.

Sample Script

Hi everyone, my name is ______. Welcome to your school garden! Now that we're out here, let's take a moment to do a mindful breathing exercise. You can either close your eyes or look down at the ground. Now let's slowly take a deep breath in, pause for a moment, and then slowly let it out. Let's do it one more time, deep breath in, pause, and slowly let it out. Now open your eyes. How do you feel?" (Allow a few students to respond.)

I'm happy to join you for the first Beach Cities Health District LiveWell Kids lesson of the year! We're going to talk about two topics today: water and food, specifically colorful fruits, and vegetables – like those that grow in your school garden.

Let's start by looking at our garden.

GARDEN OBSERVATION (2 MINUTES)

Walk the class through the garden while sharing with them what occurred in the garden during the summer.

- Usually, at the beginning of the school year, we see different vegetables growing. However, this year, there are very few vegetables.
- California, including Redondo Beach where we live, is going through a drought. This means we haven't had
 enough rain in a long time, so we don't have the water needed to care for our plants. Since all living things –
 humans, animals, and plants need water to survive, we lost the plants in our garden because they didn't get
 enough water to survive.
- When water mixes with soil, it creates a nutrient-rich solution that plants can "drink" using their roots, much like we use a straw. Even if the soil is full of nutrients, they cannot be absorbed by the plant without water.¹
- When plants are deprived of nutrients, they are weakened and do not have the energy to grow. Weakened plants are not nutrient-rich for us to eat and become a target for diseases and pests.
- When plants are deprived of water, they starve and die.
- If any plants are dead, dying or drooping, use this as an example to show how plants suffer without water.



This lesson has two parts:

- Part 1: All living things need water to live.
- Part 2: Eating a variety of colorful fruits and vegetables contributes to a nutritious diet.

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PART 1

Optional: You can use the whiteboard to write down key points or draw supplemental images.

Grades	Water in Your Body Laminate - Benefits of Drinking Water			
K-5 th	 Every part of your body needs water. Water composes:² 73% of your brain 79% of your muscles 31% of your bones Water does the following jobs in our bodies:³ Keeps body temperature normal. Removes waste (poop and pee). Protects and cushions your organs and joints. Helps carry nutrients and oxygen to your cells. Moistens oxygen for breathing. Helps convert food to energy. Helps your body absorb nutrients. 			

Grades	Dehydration & Hydration			
K-5 th	Dehydration is what happens to your body when you don't have enough water.			
	Signs of dehydration include:			
	o Thirst			
	• Headache			
	o Tired			
	 Nausea (sick to your stomach) 			
	Our bodies lose water when we:			
	 Exercise (sweat) 			
	o Breathe			
	 Use the bathroom 			
	• <u>Hydrate</u> means to add water.			
	• We need to drink enough water (hydrate) every day to replace this lost water so			
	our bodies work properly.			

Grades	Recommended Amounts of Water Laminate - Water Tracker			
K-5 th	 The amount of water a child needs depends on their age, size, activity level and the weather. An easy way to figure out the amount of water a child should drink each day is to drink the number of 8-ounce cups of water equal to their age, with a maximum of 64 ounces of water for children over the age of 8.⁴ These amounts do not include other beverages kids may consume in a day. There are a variety of intake recommendations from reliable sources. The above is one example. Active kids need extra water.⁵ 			

	• It is recommended that you drink 30 minutes <u>before</u> an activity and every 15-20
	minutes during the activity.
	 Drinking water <u>after</u> sports and play is equally important.
•	Use a Water Tracker to keep track of how much water you drink. (Show laminate: <i>Water Tracker</i>)

Grades	Creative and Hidden Ways to Get More Water Laminate - Recipes to Make Water More Fun and Eat Your Water			
K-5 th	 In addition to drinking water, there are other ways to reach individual water goals.⁶ Eat your water. Fruits and vegetables contain large amounts of water. (Show laminate: <i>Eat Your Water</i>) Make fun recipes. (Show laminate: <i>Recipes to Make Water More Fun</i>) Add flavor to water with slices of fresh lemon, cucumber, berries or watermelon. You could also use herbs, such as mint, or spices like ginger. Keep water handy Pick out a water bottle you like and take it with you. Use frozen fruit in place of ice cubes. Try using a "fun" straw or cup to make drinking water more entertaining. *IDEA – To make this section more interactive, ask students to brainstorm water recipes or come up with ways to make drinking water more enjoyable. 			

Grades	Sugary Drinks Laminate - Nutrition Facts: Sugar (Sports Drink & Cola)		
K-5 th	 You eat sugar when having cookies and ice cream, but you can also drink sugar when having certain beverages. Fruit juices, such as orange juice or apple juice, contain natural and/or added sugars.⁷ Watch out for drinks that have added sugar! Added sugars go by many names, so often they're not easy to detect on an ingredients list. In addition to the word "sugar," be on the lookout for these other names:⁸ Sucrose Fructose Honey Syrup Corn Syrup High Fructose Corn Syrup Fruit Juice Concentrates 		

Grades	Nutrition Facts Label: Sugar
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La	minate - Nutrition Facts: Sugar.
2 nd -5 th • • •	 Is sugar hiding in your drink? Become a nutrition sleuth! The Nutrition Facts Label is printed on the outside of packaged food s.⁹ Fresh food that isn't prepackaged does not need a label (e.g., lettuce, oranges, apples). The label lists what is inside the food or drink. These are called "ingredients." Ingredients are all the parts that make up the food. For example, the only ingredient in a fresh apple is an apple. Therefore, if you have a bag of apples with an ingredients list, then the only item listed will be "apple." However, there are many more ingredients in an apple pie. Therefore, this ingredient list will be much longer. You'll likely see butter, sugar, salt and flour – in addition to apples and other items. In general, the first 3-5 listed ingredients make up the largest portion of the food. The label also includes other information about the food, such as the serving size, fat, sodium, sugar, protein and more. Understanding the Nutrition Facts Label can help you make healthy food choices. For younger children who are not yet reading, suggest that when they go food shopping with their caregivers, they can show them where the food label is and ask them to read it to them out loud so they can decide together if it's a "healthy" choice.

PART 2

Grades	Nutrients
K-5 th	 Everything you eat and drink matters. Just like a car needs gas, your body needs food and water to move and stay healthy. The nutrients in food give us the energy to move, grow, think and be healthy. People, animals and plants need nutrients to live.¹⁰ Nutrients include carbohydrates, protein, fats, fiber, vitamins, minerals, and even water. It's important to eat a variety of foods so you can get lots of different "good-for-you" nutrients.

Grades	Eating the Rainbow Laminate – Benefits of Eating from the Rainbow
K – 5 th	 The type of food you choose to put in your body affects how well you feel and do at school, at home and in all your activities. Some foods, such as vegetables and fruits, are high-quality foods. They have lots of good-for-you nutrients to help us feel our best. Like the rainbow, fruits and vegetables come in a variety of colors.

• E	very color is good for you in its own special way. ^{11,12}
C	All these different color fruits and vegetables have special nutrients in them
	that work to keep you feeling healthy.
F	ollowing are a few examples: (Show laminate and ask class to think about the
f	ruits and vegetables that they've eaten and those that they would like to try.)
0	Red – apples, peppers, strawberries and tomatoes
	 Keeps our heart healthy and is good for memory.
C	Orange – carrots, peaches and oranges
	 Benefits vision and keeps our immune system strong.
C	
	 Boost immunity, protect eyes and nervous system.
C	Green – peas, spinach, broccoli and cucumbers
	 Keeps our bones, teeth and nails healthy and strong.
C	
	Improves memory and reduces blood pressure.
C	White – cauliflower, garlic, mushrooms and potatoes
	 Lowers cholesterol and blood pressure and keeps bones strong.
Y Y	ou can practice making healthy eating choices the next time you go to the
g	rocery store or farmer's market. Take a look around and think about all of the
r	ew fruits and vegetables you can try eating!
C	
C	Persimmon or sweet potato (yellow/orange)
C	Okra (green)
C	Boysenberries (blue/purple)
C	Parsnip or jicama (white)
S	ometimes you may need to try a new food several times before deciding if you
li	ke it.
• \	Vhether you're having breakfast, lunch, dinner or a snack, it's always a good
t	ime to color your plate with a variety of fruits and vegetables.

Grades	Phytochemicals			
Extra 4 th – 5 th	 Phytochemicals are compounds that occur naturally in plants.¹³ They can also be referred to as phytonutrients.¹⁴ The term 'phyto' originated from the Greek word meaning plant.⁶ Phytochemicals are found in vegetables, fruits, whole grains, legumes and nuts. One plant can have hundreds of different phytochemicals.¹⁵ Phytochemicals give fruits and vegetables their color, flavor and smell.¹⁶ Eating foods with phytochemicals can help our bodies fight off sickness by providing a range of protective nutrients. Eating lots of fruits and vegetables with phytochemicals lessens the chance of developing diseases such as high blood pressure, heart disease, and stroke.¹⁷ Evidence also shows that phytochemicals may help prevent cancer.¹⁸ Below are examples of some phytochemicals that give color to fruits and vegetables while also promoting health:¹⁹ Red – Lycopene			



Sample Script

I mentioned that water is necessary for people and plants to live. Do you know that every part of your body needs water? In fact, most of your brain (73%) and muscles (31%) are made up of water. Even your bones have water (31%)! So why do our bodies need water? (Depending on the age group you're teaching, you can list some of the benefits of water. See box, "Water in Your Body.")

Dehydration is the word used when your body doesn't have enough water. We lose water when we exercise/ sweat, breathe and use the bathroom. Think about how you feel after running around, maybe on a hot day, and you didn't drink enough water. If you're dehydrated, you may feel thirsty, tired, have a headache or even feel sick to your stomach.

This is why it's very important to hydrate – to add water to your body. The amount of water you need depends on your age, size, activity level and even the weather. An easy way to figure out the amount of water you should drink each day is to drink the number of 8-ounce cups of water equal to your age. So, if you are 8 years old, then you should drink 8 cups of water that look like this. (Show 8-ounce cup filled with water.) If you are older than 8, then you don't need to drink more than 8 cups, unless it's a day when you are active, if it's hot outside or have a medical reason. For example, if you are playing sports, it's recommended that you drink 30 minutes before the activity, every 15-20 minutes during the activity and drink more water when your game is over. Your body needs a lot of water to keep you feeling good! (Show "Water Tracker" laminate.)

There are fun ways to get water. (See box, "Creative and Hidden Ways to Get More Water," for a list.)

We've talked a lot about water, but what about other drinks? This is when you have to be on the lookout for sugar that is added to drinks. You give your body sugar when eating cookies and ice cream, but you can also drink sugar. Watch out for drinks that have added sugar! (See box, "Sugary Drinks," for more details. Also, for older students, you can show the laminate, "Nutrition Facts Label: Sugar, to show how the label can show the amount of sugar in a product.)

As you can see, everything you eat and drink matters! Just like a car needs gas, your body needs food and water to move and stay healthy. What is in food and water that gives us the energy to move, grow, think and be healthy? Nutrients! People, animals and plants need nutrients to live. Nutrients include carbohydrates, protein, fat, fiber, vitamins, minerals – and yes, water too! I used some big words just now, so this image may be helpful:

Think of a carrot that you built out of Legos. Each Lego piece is a different nutrient. Different nutrients, or Lego pieces, do different things that our bodies need. Nutrients can be vitamins, such as vitamin A, which is found in carrots and spinach for example. So, your Lego carrots and spinach would have lots of vitamin A Lego pieces. Nutrients can also be minerals, such as potassium, which is in bananas and potatoes. Carbohydrates, fats, proteins, and water are other examples of nutrients. Keep in mind that foods can have a bunch of different nutrients in

We know that fruits and vegetables are an important part of what we eat because they're packed full of nutrients that help our bodies feel their best. Like the rainbow, fruits and vegetables come in many colors. There's a reason for these colors. Each color represents different nutrients found in our food.

Let's talk some more about the benefits of colorful fruits and vegetables: (select a few examples from the list below, being mindful of time)

- *Red produce contains lycopene which promotes a strong er heart. Can you name some red fruits and vegetables?*
 - Examples: strawberries, tomatoes, apples, red pepper and watermelon
- Orange produce has vitamin A which improves vision. Can you name some orange fruits and vegetables?
 Examples: peaches, orange peppers and carrots
- Yellow produce is rich in vitamin C, which helps fight off sickness. Can you name some yellow fruits and vegetables?
 - Examples: bananas, lemon, yellow peppers, mango and pineapple
- Blue or purple produce has lots of antioxidants. These are substances that can protect your body from heart disease, cancer and other diseases. Antioxidants are also good for your brain. Can you name some blue and purple fruits and vegetables?
 - Examples: blueberries, grapes, eggplant, plums, blackberries and red onions

You can practice making healthy eating choices the next time you go to the grocery store or farmer's market. Take a look around and think about all of the new fruits and vegetables you can try eating! Sometimes you may need to try a new food several times before deciding if you like it.

Whether you're having breakfast, lunch, dinner or a snack, it's always a good time to color your plate with a variety of fruits and vegetables.

OPTIONAL: Add "Phytochemicals" FOR 4th − 5TH GRADES

Phytochemicals, sometimes called phytonutrients, are compounds that occur naturally in plants. The term 'phyto' originated from a Greek word meaning plant. Phytochemicals help our bodies fight off sickness. They also give fruits and vegetables their color, flavor and smell. In addition to fruits and vegetables, phytochemicals are also found in whole grains, legumes and nuts. One plant can have hundreds of phytochemicals.

- Red Lycopene
 - Keeps our heart healthy and is good for memory.
 - Orange/ Yellow Vitamin A, Vitamin C and Carotenoids
 - Benefits vision and keeps our immune system strong.
- Green Lutein

•

- Keeps our bones, teeth and nails healthy and strong.
- Blue/Purple Anthocyanins
 - Improves memory and reduces blood pressure.
- White/Tan Allicin
 - Lowers cholesterol and blood pressure and keeps bones strong.

CLOSING (1 MINUTE)

- Bring students together to close the lesson and thank the students, teacher, and other volunteers.
- Recap what they learned and inform them that they will be planting new seeds in their next lesson.
- If time allows, have students draw/write a 'Reflection Page' after the lesson, either in the garden or with the teacher when they return to class. If you see any that you'd like to share with us, take a photo before the students leave with them and share with us: <u>Mishell.Balzer@bchd.org</u> and/or <u>Tami.Kachel@bchd.org</u>
- Thank the students for joining you today and dismiss them.

Sample script

Thank you for joining me today. We learned a lot about why water and colorful fruits and vegetables are important for keeping our bodies healthy. At home, you can create, or print from the computer, a Water Tracker for your family to make sure everyone is drinking enough water. Also, let them know that each of the colors in fruits and vegetables have special nutrients in them that help us feel our best!

See you next time when we'll plant cool season crops together and learn about whole foods.

*Don't forget to report your lesson as delivered with the online form – scan here:





Resources

¹ Heat and drought have long-term impacts on your yard and garden. (2021, August 21). InForum. https://www.inforum.com/lifestyle/heat-and-drought-have-long-term-impacts-on-your-yard-and-garden#:~:text=Trees%2C%20shrubs%2C%20flowers%20and%20vegetables

² Water Science School. (2019, May 22). *The Water in You: Water and the Human Body | U.S. Geological Survey*. Www.usgs.gov. https://www.usgs.gov/special-topics/water-science-school/science/water-you-water-and-human-body

³ Water: Essential to your body. (n.d.). Mayo Clinic Health System. https://www.mayoclinichealthsystem.org/hometown-health/speaking-of-health/wateressential-to-your-

body#:~:text=Here%20are%20just%20a%20fe w%20important%20ways%20water%20works%20in%20your%20body%3A&text=Carries%20nutrients%20 and%20o xygen%20to

⁴ How Much Water Should My Child Drink? (n.d.). CHOC Children's. https://www.choc.org/programs-services/urology/how-much-water-should-my-child-drink/ ⁵ Bring a Water Bottle and Take Regular Breaks. (n.d.). Retrieved May 5, 2022, from

https://www.safekids.org/sites/default/files/documents/sports/DEHYDRATION%20SAFETY%20TIP%20SHEET%202013.pdf

⁶ Reiland, L. (2021, July 12). *Tips for drinking more water*. Mayo Clinic Health System. https://www.mayoclinichealthsystem.org/hometown-health/speaking-of-health/tips-for-drinking-more-water

⁷ The truth about juice. (n.d.). Heart and Stroke Foundation of Canada. https://www.heartandstroke.ca/articles/the-truth-about-juice

⁸ Barnwell, A. (2020, February 4). Secret Sugars: The 56 Different Names for Sugar. Virta Health. https://www.virtahealth.com/blog/names-for-sugar

⁹ Center for Food Safety and Applied Nutrition. (2020). How to Understand and Use the Nutrition Facts Label. FDA. https://www.fda.gov/food/new-nutrition-facts-label/how-understand-and-use-nutrition-facts-label

¹⁰nutrient | Wordsmyth Word Explorer Children's Dictionary; WILD dictionary K-2 | Wordsmyth.(2022). Kids.wordsmyth.net.

https://kids.wordsmyth.net/we/?level=2&rid=28365)

¹¹ Anonymous. (2020, February 24). Brighten Your Plate by Choosing Colorful Fruits and Vegetables. Cns. https://cns.ucdavis.edu/news/brighten-your-plate-choosing-colorful-fruits-and-vegetables

¹² Eat the rainbow. (n.d.). www.safetyandhealthmagazine.com. https://www.safetyandhealthmagazine.com/articles/20391-eat-the-rainbow

¹³ Vo, J. (2019, January 3). Nutrition & Health Info Sheets for Consumers - Phytochemicals. UC Davis Nutrition Department.

https://nutrition.ucdavis.edu/outreach/nutr-health-info-sheets/consumer-phytochemical

¹⁴ National Cancer Institute. (2011, February 2). NCI Drug Dictionary. National Cancer Institute. https://www.cancer.gov/publications/dictionaries/cancer-

drug/def/phytochemical

¹⁵ Benefits of Eating the Rainbow. (n.d.).

https://www.columbus.gov/uploadedFiles/Columbus/Departments/Human_Resources/Healthy_Columbus/Wellness_Programs/Health%20Benefits%20of%20Eating%20the%20Rainbow%201.pdf

¹⁶ The Colors in Your Fruits and Vegetables is Thanks to Phytochemicals. (n.d.). The Colors in Your Fruits and Vegetables Is Thanks to Phytochemicals. Retrieved July 6, 2022, from https://www.uaex.uada.edu/counties/miller/news/fcs/fruits-veggies/The-Colors-in-Your-Fruits-and-Vegetables-is-Thanks-to-Phytochemicals.aspx#:~:text=Phytochemicals.

¹⁷ Boeing H, et al. Critical review: vegetables and fruit in the prevention of chronic diseases. Eur J Nutr. 2012 Sep;51(6):637-63. doi: 10.1007/s00394-012-0380-y. ¹⁸ Kotecha R, et al. Dietary phytochemicals and cancer chemoprevention: a review of the clinical evidence. Oncotarget. 2016 May 25. doi:

10.18632/oncotarget.9593.

 $^{\rm 19}$ Benefits of Eating the Rainbow. (n.d.).

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