



## **Green Kids Kitchen Lesson Plan for Homeschool**

### Overview

Raddish is designed by a dedicated team of teachers and chefs who believe the kitchen classroom is the tastiest place to learn. We love watching learning come alive when kids mix math, stir science, and taste culture!

Paired with the materials found in your Green Kids Kitchen box, this lesson plan divides your box into 3 45-90 minute lessons you can use and adapt to support your homeschool study, pre-k – middle school. Depending on your timeframe and child's age and engagement, these can be taught together or separated for a longer lesson. Please refer to the curriculum provided in your box: recipe guides, activity card, and introduction card. Happy cooking! Happy learning!

### **Lesson 1: Sweet Pea Soup and Why Eat Seasonally**

Activity Time: 60 minutes

#### **Learning Outcomes**

- Students will learn why eating locally is beneficial for them, their community, and the environment.
- Students will do a long-term comparative research project of their favorite fruit or vegetable, using their senses and economic/environmental data.
- Students will use adjectives to describe their fruit.
- Students will make and share Sweet Pea Soup.

#### **Materials**

- Recipe guide, ingredients, and tools listed within.
- Comparative Research Worksheet (included)
- Epicurious Seasonal Ingredient Map  
[www.epicurious.com/archive/seasonalcooking/farmtotable/seasonalingredientmap](http://www.epicurious.com/archive/seasonalcooking/farmtotable/seasonalingredientmap)



## Optional Viewing

Only for Older Students due to adult language.

Netflix has a documentary series called Chef's Table. One of the episodes focuses on Dan Barber. He is the chef and co-owner of Blue Hill in Manhattan and Blue Hill at Stone Barns in Pocantico Hills, New York. As a chef, farmer, food industry revolutionary, and human he has made it his mission to eat locally and improve the flavor of food right down to the soil. The episodes are an hour long.

## Websites used to create this lesson

- [www.mindbodygreen.com](http://www.mindbodygreen.com)
- [www.epicurious.com/archive/seasonalcooking/farmtotable/seasonalingredientmap](http://www.epicurious.com/archive/seasonalcooking/farmtotable/seasonalingredientmap)
- [www.naturallysavvy.com](http://www.naturallysavvy.com)
- <http://www.theecologycenter.org>

## I. Introduction

- Ask students to name 3 fruits and/or vegetables that they eat regularly.
  - Do you know where those foods are grown?
  - Do you think the food comes from nearby or far away? How do they arrive on our table?
  - Do you think the food tastes the same regardless of the month you are eating it?
- Introduce and discuss the term *seasonality*. Seasonality refers to the times of year when a plant is harvested. For the purpose of this conversation it includes the idea of proximity between where food is grown and where it is eaten. For example, strawberries may be in season in Mexico in January but if you live in New York that piece of fruit has to travel 2,400 miles and take more than 2 days to get to your local store. Do you think that strawberry would taste as good as a strawberry that grows in New York State in June and only has to travel 100 miles, a 1 hour drive, before you can eat it?
- Optional** provide a snack of a fruit that is in season and one that is not. Have students taste the foods and comment on what they observe with all of their senses. Have them compare the two foods. Is one of them better than the other? Why?
- Let students know that today they are going to be learning and discussing the benefits of eating seasonally.

## 2. Benefits of Eating Seasonally

- Ask students to list reasons why eating seasonally may be a good idea. Have them discuss with a partner.
- Read the Benefits of Eating Seasonally section of the Sweet Pea Soup recipe guide.
  - Do the students agree with the three reasons given?



- ii. Do the students have any other reasons? If so have them share their ideas.
- c. Other reasons could include
  - i. Community- getting to know where your food is coming from, who is growing your food and how they harvest it, makes you feel more connected to the whole process. Places like farmers markets create communities around food that encourage us to share our knowledge, ask questions, engage in our local environment and even make new friends!
  - ii. Home Cooking- eating seasonally also encourages you to cook more with whole fresh ingredients, which is also really good for your health. When you know and control exactly what ingredients are going into your recipes and into your mouth, you tend to eat more healthfully. Also, cooking is a fun activity to do with your family.
  - iii. Creativity and Variety- when you shop and cook seasonally you will likely encounter some foods that are new to you. Also when there is an abundance of one particular food you have to get creative to prepare it in many different ways.
  - iv. Organic or lesser pesticides- foods grown outside of their season or natural environment need more human assistance in forms of pesticides, waxes, chemicals and preservatives to look appealing to us to buy them. By choosing local and seasonal food you are more likely to get a cleaner product.

### 3. Comparison Research Warm Up

- a. Practice the idea of comparison by playing a game. Choose two items that have many different attributes. Place them in front of the students to observe. What do they notice about how the objects look, feel, sound etc.
- b. Create a chart that has two columns: each headed with the name of the object. Then have students take turns saying what is different or the same about the objects. For example, a ball and a cardboard box.

<b>BALL</b>	<b>BOX</b>
red	brown
round	flat
sphere	cuboid
bouncy	not bouncy
rubber	paper
fun	boring
shiny	matte



### **Seasonal Food Comparative Research**

- a. Students should choose a fruit or vegetable that can be grown somewhere in the country -- for example you will never eat a seasonal/local banana in Washington State. They will find out if it is seasonally available or unavailable by visiting a farmers market or using the online Epicurious map.
- b. Students will purchase, observe and eat the fruit now and record their impressions. Then they will repeat the research again at a time when the fruit is in the opposite state of seasonal availability and repeat the research.
- c. Provide students with the Seasonal Food Comparative Research Worksheet (included) for questions to guide them.

### **Extensions**

- a. Make a poster, brochure, or commercial about the benefits of eating seasonally.
- b. Challenge and support your family to eat as seasonally as possible for 1 day, 1 week or 1 month. This is obviously easier in the summer months and in some parts of the country than others.
- c. Create a taste challenge for your friends and family to see if they can tell if a food is in season or not.

### **4. Kitchen Prep**

- a. Read the Sweet Pea Soup recipe card together.
- b. Identify and gather ingredients.
- c. Gather tools.
- d. Discuss kitchen safety. Specifically, stove top safety (Visit [Raddishkids.com/pages/safety](http://Raddishkids.com/pages/safety))

### **5. Prepare Sweet Pea Soup**

- a. Ask children to read or describe each step.
- b. Together, follow the steps in the recipe.
- c. Give each child a turn to slice, stir and measure.
- d. When the Sweet Pea Soup is ready, eat, taste and share!
- e. While you are eating have students share what they learned about the benefits of eating seasonally.



**Lesson 2: Zucchini Muffins  
and Photosynthesis**  
Activity Time: 90 minutes

### Learning Outcomes

- Students will learn the terms *photosynthesis*, *carbon dioxide*, *stomata*, *chlorophyll*, and *glucose*.
- Students will learn about the raw materials necessary for photosynthesis.
- Students will understand the influence of photosynthesis on the environment.
- Students will draw and label the process of photosynthesis.
- Students will conduct an experiment to see what happens when you take away one of the raw materials necessary for photosynthesis.
- Students will learn that plants make glucose/carbohydrates, which not only feed the plant but feed us too.
- Students will make Zucchini Muffins to share with their friends and family.

### Materials

- Recipe guide, ingredients, and tools listed within
- Paper and drawing tools
- Photosynthesis Pictorial Teacher Instructions (included)
- Videos
  - Younger students- The Dr. Binocs Show 3:41  
[www.youtube.com/watch?v=DIYmc3IIXS8](http://www.youtube.com/watch?v=DIYmc3IIXS8)
  - Older students- Photosynthesis in Plants 4:52  
[www.youtube.com/watch?v=3pD68uxRLkM](http://www.youtube.com/watch?v=3pD68uxRLkM)

### For Experiment

- Experiment- How Important is Sunlight in Photosynthesis? (instructions included)
- A house plant
- Tin foil
- Paper clips
- Pencil and paper
- Scissors

### Websites used to create this lesson

- Experiment- How important is Sunlight in Photosynthesis adapted from <https://kenanfellows.org/kfp-cp-sites/cp2/cp2/lessons-5-photosynthesis/index.html>
- <http://photosynthesisforkids.com>
- [www.thekidsgarden.co.uk](http://www.thekidsgarden.co.uk)



- [www.brighthubeducation.com](http://www.brighthubeducation.com)
- [www.scientificamerican.com/article/timeline-of-photosynthesis-on-earth/](http://www.scientificamerican.com/article/timeline-of-photosynthesis-on-earth/)

## I. Introduction

- Place a houseplant on the table.
- Have students brainstorm what they know about plants. What do plants need to survive? How do they get water? Record their ideas on chart paper.
- Let students know that today they are going to learn more about the process of photosynthesis, why it is important to the earth, and how we benefit from it.

### **What is Photosynthesis?**

You can divide the word *photosynthesis* into two parts. “Photo” is the Greek word for light and “synthesis” is the Greek word for putting together. These two words explain what photosynthesis is. It is using light to put things together. You may have noticed that humans and animals eat food, but plants do not.

Photosynthesis is how plants eat. Plants cannot go out and hunt like a lion. They are stuck in one place but they can make their own food as long as they have three things.

The three things plants need to make food are carbon dioxide (what we breathe out), water and light.

Just as humans drink water when they are thirsty, plants take in water through their roots. They also absorb carbon dioxide from the air through cells on their leaves called *stomata*. When you look at stomata under a microscope it looks like a tiny mouth. In the leaf there is also a substance called *chlorophyll* which is what gives plants their green color.

When the water and carbon dioxide are in the chlorophyll in the presence of sunlight, they turn into oxygen and glucose, or sugar. This is photosynthesis! The plants then use the glucose as a source of energy to grow, just as you need food to grow. They release the oxygen back into the environment for us to breathe.

## 2. What is Photosynthesis?- further explanation and assessment

- Have students watch the video that is appropriate for their age and ability.
  - Younger students- The Dr. Binocs Show (3:41)  
[www.youtube.com/watch?v=DIYmc31IXS8](http://www.youtube.com/watch?v=DIYmc31IXS8)
  - Older students- Photosynthesis in Plants (4:52)  
[www.youtube.com/watch?v=3pD68uxRLkM](http://www.youtube.com/watch?v=3pD68uxRLkM)



- b. To assess understanding, provide students with paper and drawing tools. Have them draw what they understand of the process of photosynthesis. See the Photosynthesis Pictorial Teacher Instructions (included).
- c. Have students share their diagrams with one another. Do they agree with each other? Can they add information or correct one another?

### 3. Experiment- How Important is Sunlight in Photosynthesis?

Now that students have an understanding of the process of photosynthesis, provide them with an experiment to see it in action!

- a. See the **Experiment- How Important is Sunlight in Photosynthesis?** (included) for all instructions and worksheet.

#### **Benefits of Photosynthesis**

Before there was photosynthesis, there was not much oxygen in our atmosphere. So before plants evolved the ability to turn water and carbon dioxide into sugar and oxygen, there was no way for plants and animals to exist on earth. Before photosynthesis, bacteria and other living things used other chemicals to make their food. When photosynthesis started it worked really well, so organisms (living things like Cyanobacteria- the first oxygen producers) that had photosynthesis thrived and evolved into plants and trees. As more plants grew across the planet, more oxygen went into the atmosphere which helped animals to prosper. Humans could not survive without photosynthesis!

Plants use photosynthesis to feed themselves and then we use the plants, like zucchini, to feed ourselves. Photosynthesis is the foundation for the entire food chain. Herbivores eat plants which provide us with milk and eggs and meat.

Fun fact- The average sized tree can produce enough oxygen to keep 2-4 people alive.

### 4. Extension Ideas

- a. Have students write a song teaching photosynthesis to the tune of “You are my Sunshine.”
- b. Have students explore what photosynthesis has to do with global warming. How can they get involved?

### 5. Kitchen Prep

- a. Read the title page together.
- b. Identify and gather ingredients and tools.
- c. Discuss kitchen safety, in particular using the box grater. (Visit [Raddishkids.com/pages/safety](http://Raddishkids.com/pages/safety))



## 6. Prepare Zucchini Muffins

- a. Ask children to read or describe each step.
- b. Give each child a turn grating, measuring and mixing.
- c. While the muffins are baking, create a gallery of Pictorial Representations of Photosynthesis.
- d. Once the Zucchini Muffins are ready Eat, Taste and Share!
- e. While you are eating, share your understanding of photosynthesis with your friends and family.





### **Lesson 3: Pesto Pizzettes and Reusable-Recyclable Art**

Activity time: 45 minutes

#### **Learning Outcomes**

- Students will learn ways to create a “green” kitchen.
- Students will discuss the terms, *reduce, reuse, and recycle*.
- Students will learn what items can be recycled and challenge their family to do more.
- Students will learn how paper and plastic are recycled.
- Students will have the opportunity to recycle their own used paper into new paper.
- Students will have the opportunity to make art out of used plastic bottles.
- Students will learn blender safety.
- Students will make Pesto Pizzettes.

#### **Materials**

- Recipe guide and ingredients and tools listed within
- Youtube. Jack Johnson 3 R song (2:44) <https://www.youtube.com/watch?v=U6lbRSRe8MQ>

#### **Recycle and Reuse Activities**

- Paper Making Materials
  - Blender
  - Colander Tub or large bowl
  - 2 kitchen towels
  - Garbage bag
  - Scissors
  - Odd bits of paper (tissue paper, newspaper, construction paper etc.- not glossy magazine paper, no staples or tape on it)
  - Optional plant seeds
- Plastic Bottle Activities
  - YouTube video- 10 DIY to reuse Plastic Bottles 9:08  
[https://www.youtube.com/watch?v=edXimuzlVhk&ebc=ANyPxKoBtQbxjpPqguqFzgvWiyJbDq95F5HXT4ub3dh8RmO5Rp2Zslu2hd6iGBTTHjCT-xw4YWK8eyTqY8kXI08\\_ISZ9Q5hfA](https://www.youtube.com/watch?v=edXimuzlVhk&ebc=ANyPxKoBtQbxjpPqguqFzgvWiyJbDq95F5HXT4ub3dh8RmO5Rp2Zslu2hd6iGBTTHjCT-xw4YWK8eyTqY8kXI08_ISZ9Q5hfA)
    - Materials
      - Plastic bottles
      - Scissors



- Glue gun
- Hot iron
- Idea #8 involves no hot tools and is useful for phone charging
- Idea #9 is also no heat and is for kitchen storage
- YouTube video- How to make a Orange Juice Squeezer from plastic bottles (2:41)  
[https://www.youtube.com/watch?v=OF3P\\_gM\\_zjM](https://www.youtube.com/watch?v=OF3P_gM_zjM)
  - Materials
    - 1.5 liter and .5 liter plastic bottle
    - Wooden skewer
    - Scissors
    - Orange
    - glass
- Newspaper Ideas
  - YouTube Video- Turn Newspaper into a gift bag 3:51  
[https://www.youtube.com/watch?v=n\\_t05qtYDAM](https://www.youtube.com/watch?v=n_t05qtYDAM)
    - Materials
      - Newspaper
      - Glue stick
      - Box or book for shape
      - Ribbon for handle
  - YouTube video- Make a Basket out of Newspaper (2:44)  
<https://www.youtube.com/watch?v=WmJsDj7lgdQ>
    - Materials
      - Newspaper
      - Scissors
      - Stapler

### **Resources consulted for this lesson plan**

- [www.naturalsociety.com/recycling-symbols-numbers-plastic-bottles-meaning/](http://www.naturalsociety.com/recycling-symbols-numbers-plastic-bottles-meaning/)
- [www.kidsbegreen.com](http://www.kidsbegreen.com)
- [www.ecokidsusa.org/3rs.html](http://www.ecokidsusa.org/3rs.html)

### **I. Introduction- Creating a Green Kitchen**

- a. Ask students to share actions they current take around their home to help the planet.
- b. Ask: what other things can we do that we are not currently doing?
- c. Read the Creating a Green Kitchen on the Pesto Pizettes Recipe guide.
  - i. Count and discuss which actions students are already undertaking.
  - ii. Which waste reduction idea is most common and easiest to implement?
  - iii. What idea did they think would be the hardest to implement? Why



iv. Did this list give them inspiration for more ideas to be green?

## 2. Reduce, Reuse, Recycle

- a. Watch or listen to the Jack Johnson song *The 3 Rs*.
- b. All of the waste reduction suggestions from the recipe guide are about *reusing and reducing*. Reuse means using something again rather than throwing it out. That usually means finding a new use, such as making a plastic bottle into a planter. Reducing means cutting down on the amount of garbage or trash that is made. The best way to reduce is to only buy things you really need and minimize the packaging.
- c. Reducing and reusing are your first two most powerful tools in waste reduction. *Recycling* is the next tool. Recycling takes materials from items you have finished using and makes them into brand new products.
- d. Read the Curbside Recycling section of the Pesto Pizettes recipe guide.
- e. Optionally, you can watch some videos about recycling
  - i. Recycling Plastic Bottles (3:19)  
<https://www.youtube.com/watch?v=WLkZ6LzwCQY>
  - ii. How it is made: Recycling Paper (5:19)  
<https://www.youtube.com/watch?v=2c8YxMb0tlk>

## 3. Extension Ideas

- a. Wondering what the numbers mean on your plastic bottles and containers? Read the information on this website and see if you can bring less harmful plastics into your home. [www.naturalsociety.com/recycling-symbols-numbers-plastic-bottles-meaning/](http://www.naturalsociety.com/recycling-symbols-numbers-plastic-bottles-meaning/)
- b. Now that you understand about reducing, reusing, and recycling: make a plan for your family to create less waste.
- c. Were you inspired by Jack Johnson's song? Write a poem or song of your own to inform and motivate people to make a positive change in waste reduction for the environment.

## 4. Reuse it Art Projects

- a. **Blender Paper-** See the attached instruction sheet.
- b. **Plastic Bottle Ideas-** see the videos in the materials list above
- c. **Paper Reuse-** see the videos in the materials list above

## 5. Kitchen Prep

- a. Read the title page together.
- b. Identify and gather ingredients and tools.
- c. Discuss kitchen safety, in particular Blender Safety in the Featured Culinary Skill section of the recipe guide. (Visit [Raddishkids.com/pages/safety](http://Raddishkids.com/pages/safety))

## 6. Prepare Pesto Pizettes

- a. Ask children to read or describe each step.



- b. Give each child a turn, chopping, blending, assembling etc.
- c. Once your Pesto Pizzettes are ready gather your family and friends together to Eat, Taste and Share!
- d. While you have everyone together you can share your reused material art projects and/or get your family on board with a plan to reduce your waste!

# Seasonal Food Comparative Research Worksheet

1. Choose a favorite fruit that can be grown nearby.
  - My fruit is \_\_\_\_\_
2. Is your fruit seasonally available now? \_\_\_\_\_ (If not, find out when it will be seasonally available in your area and make a plan to repeat this research at that time. If so, then make a plan to repeat this research when it is not seasonally available.)
3. Go and purchase that fruit. Record your answers to the following questions:
  - Where did you buy it? \_\_\_\_\_  
\_\_\_\_\_
  - Where was it grown? Get as specific as you can. \_\_\_\_\_  
\_\_\_\_\_
  - Calculate the distance your food traveled to get to you. \_\_\_\_\_  
\_\_\_\_\_
  - Was it hard to find? \_\_\_\_\_
  - Was it ripe when you bought it or did you have to leave it to ripen? \_\_\_\_\_  
\_\_\_\_\_
  - How much did it cost? \_\_\_\_\_
4. Observe your fruit.
  - Describe what it looks and feels like. You can take a photo or draw a picture as well. \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
5. Taste your fruit.
  - Describe how it tastes. Is it juicy? Mushy? Flavorful? Bitter? Bland? \_\_\_\_\_  
\_\_\_\_\_
  - Would you recommend it to a friend? Why or why not? \_\_\_\_\_  
\_\_\_\_\_
6. Repeat the experiment as described in Step 2, trying the same fruit again in approximately 3-6 months.

7. Create a comparison table between the two samples of fruit.

Seasonally Available	Not Seasonally Available

8. What are your conclusions? Was one sample of fruit better than the other? Was the cost different? Was the environmental impact different? Which fruit would you recommend to buy and why?

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## **Experiment:** **How Important is Sunlight in Photosynthesis?**

Having students experience what happens to plants when they do not receive sufficient exposure to sunlight is essential when teaching photosynthesis. With this scientific experiment, you can demonstrate the effect of too little sunlight on plants in just a few days.

1. **Materials:** plant, aluminum foil, paper clips, and a pair of scissors.
2. Instruct students they are going to be exploring the **question:** What happens to plants when they do not receive enough sunlight?
3. Have students write down the question and what their **hypothesis** is? What do they think will happen to a plant that doesn't receive enough sunlight?
4. **Experiment:** Have the student cut the foil into small pieces. The pieces should be small enough to fit on the plant's leaves.
5. Using the paper clips, secure the foil pieces to several leaves on the plant.
6. Place the plant in a sunny location, such as outside or near a window.
7. **Observation and Data Collection (see data collection graph next page):** Everyday, check a leaf by removing the foil. Describe the appearance of the leaf and include a detailed picture. Return the foil until the next day. On Day 5 have your students remove all the foil and do their final observation. Do the parts that were covered by foil will look different from the parts exposed to sunlight?
8. **Conclusion-** Was the student's hypothesis correct? Have them write or describe what happened. Encourage them to use the vocabulary learned: photosynthesis, stomata, carbon dioxide, and chlorophyll.
9. **Extension-** After the foil has been removed, do the leaves of the plant recover? Have students make a further hypothesis and observe the plant over the next week.

## Experiment: How Important is Sunlight in Photosynthesis?

Question: \_\_\_\_\_

\_\_\_\_\_

Hypothesis: \_\_\_\_\_

\_\_\_\_\_

Materials: \_\_\_\_\_

\_\_\_\_\_

### Observation and Data Collection

Date and Time	Describe the appearance of the leaf	Illustration

Conclusions: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_



## Photosynthesis Pictorial Activity and Assessment

Depending on students' age and ability you can provide as much or as little direction in this activity as you see fit. This is an excellent assessment tool to see how much a student has retained or understood of the process of photosynthesis.

### Least Support:

Using construction paper and crayons or markers, have your students design a pictorial representation of photosynthesis and label it.

### Moderate Support:

Follow directions above, but provide a list of specific terms you want included. For example, photosynthesis, chlorophyll, sunlight etc.

### High Support

1. Instruct the student to draw a plant or flower on the paper.
2. Have the student draw a sun above the plant to symbolize the sun's energy.
3. Ask the student to add a source of water for the plant. This can be in the form of raindrops or groundwater.
4. On the left side of the paper, have the student write the words "Carbon Dioxide" or write the term for them, depending on age and ability. Draw an arrow leading from the term to the plant to show that the plant is taking in the carbon dioxide from the environment.
5. On the right side of the paper, have the student write the word "Oxygen." Draw an arrow pointing away from the plant to symbolize the release of oxygen into the surrounding air.
6. Have the student draw a sugar cube near the base of the plant to symbolize the glucose produced by photosynthesis.
7. Have the student verbally explain how each step of the process works while using the drawing as an aid.

## Blender Paper Making

- a. Have students help you gather paper making materials.
- b. Review Blender Safety in the Featured Culinary Skill section of your Pesto Pizzettes Recipe Guide
- c. Have students shred the paper into little pieces (approx 2" square). Torn edges work better than cut edges because they soak up more water.
- d. Add some of the paper to the blender about 2/3 of the way (don't pack it in). Cover with warm water. Put on the lid and run the blender on a low speed. If the blender doesn't run easily add more water. You will be squeezing all of the water out so you can't really have too much.
- e. Run the blender until you have a nice smooth pulp.
- f. Remove pulp from blender. Place pulp in colander and press until you get out as much water as possible. Or place a bowl inside of the colander to help squeeze down. If desired, at this point you can stir in plant seeds, one packet per student. If you have more than one student repeat this step for one batch per student.
- g. Cut garbage bag in half. Spread one layer of bag on whatever surface you are using (if you live somewhere dry, outside is best). Place kitchen towel onto garbage bag. Then spread paper mixture evenly over the towel. You can spread it out in whatever shape you like. The thicker the paper the longer it takes to dry. Next, put the second kitchen towel on top. And cover again with the other half of the garbage bag.
- h. Finally, weigh down your paper with some heavy books and leave to dry. Depending on how dry it is where you live this can take 2-5 days.
- i. When you are done you can use your paper for whatever you like. If you added seeds you can make a card out of it and give it to a friend to enjoy and plant in their garden!