



## **Grateful Table 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 Grateful Table box, this lesson plan divides your box into 3 45-90 minute lessons you can use and adapt to support your homeschool study for younger students (pre-k – 3<sup>rd</sup> grade) and older students (4<sup>th</sup> – 8<sup>th</sup> grade). 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 cards, skill card, and introduction card. Happy cooking! Happy learning!

### **Lesson 1: Grateful Green Beans and The Science of Cooking Green Vegetables**

Activity Time: 45 minutes

#### **Learning Outcomes**

- Students will observe vegetables using the five senses.
- Students will describe various properties of vegetables.
- Students will brainstorm and sort ideas into categories.
- Students will communicate and record their observations orally, through drawing or writing.
- Students will observe water in both its liquid and gas state.
- Students will discover how the properties of substances change when it is heated.
- Students will make predications based on observed patterns.
- Students will follow oral instructions to conduct scientific investigation.
- Students will learn what makes vegetables green.
- Students will learn the terms chlorophyll and photosynthesis.
- Students will learn the culinary technique of blanching.
- Students will make and share Grateful Green Beans.



## Materials

- Recipe guide, ingredients, and tools listed within.
- Sticky notes or index and tape.
- For Science Experiment:
  - A fresh green vegetable like broccoli or green beans
  - Pot filled with water
  - Baking soda
  - A timer
  - Green Vegetable Experiment Observations Sheet (included)
- Optional – Good story books for teaching about fruits and vegetables.
  - The Vegetables We Eat by Gail Gibons
  - Growing Vegetable Soup by Lois Ehlert
  - Eat Your Peas Louise! By Pegeen Snow
  - Oliver’s Vegetables by Vivian French
- Websites consulted to create this lesson:
  - [www.discoverexplorelern.com](http://www.discoverexplorelern.com)
  - [www.indianapublicmedia.org/amomentofscience/color-changing-veggies/](http://www.indianapublicmedia.org/amomentofscience/color-changing-veggies/)
  - <http://photosynthesisforkids.com>

## I. Introduction

- a. Have students brainstorm things that are green and write them down or draw a picture on a sticky note.
  - i. Have students share their brainstorm results. Did they have any answers in common?
  - ii. Have students come up with categories that their green ideas fit into and sort their papers under those headings. For example, things in nature, sport team uniforms, foods, books etc.
  - iii. What category did they have the most ideas from? Why do they think so?
- b. Let students know that today they will be talking about vegetables and what makes them green.

### Why Are Some Vegetables Green

Green vegetables have a substance called *chlorophyll* which makes leaves green. It is a green pigment that is necessary for photosynthesis, which is how plants make their food. During photosynthesis, chlorophyll captures the sun’s rays and creates energy for the plant to grow. (For a more in depth study of photosynthesis see <http://photosynthesisforkids.com> )



## 2. The Science of Cooking Green Vegetables

- a. Gather together the experiment materials (listed above).
- b. **Experiment One-**
  - i. Have students observe the green vegetable (one or two green beans or a small piece of broccoli) with all of their senses. Have them record their observations on the Experiment Observation Sheet.
  - ii. Fill the pot about half full of water and place it on the stove top. Bring water to a boil. Discuss kitchen safety. Specifically, stove top safety (Visit [Raddishkids.com/pages/safety](http://Raddishkids.com/pages/safety))
  - iii. Once boiling, add the vegetable and start your timer. Watch the vegetable carefully and notice what happens to the color. After a minute, put the lid on the pot. Record the findings.
  - iv. Boil the vegetable for 15 minutes. Then take it out of the water and place it on a plate. Observe the color and texture again. Record the third observation.
- c. **What happened?** When you first added the vegetable to the pot, it turned bright green. This is because the hot water makes air bubbles between the plant cells expand and escape. This gives you a much clearer view of the chlorophyll that gives the vegetable its green color. After the vegetable has cooked for 15 minutes the color changed again. Now the green is much duller! This is because the chlorophyll changed its chemical structure. The heat makes it easy for the chlorophyll to lose magnesium. The magnesium is replaced by hydrogen which is acid. This chemical change causes the color to change to dull green.
- d. **Experiment Two-**
  - i. Empty the pot and start with the same amount of fresh water. Repeat the experiment, but this time, add some baking soda to the water. Fill in the observation sheet at the beginning, again when the vegetable goes in the water and finally after 15 minutes. What is different this time? What happens after 15 minutes?
- e. **What happened?** This time the change is chemical. The hydrogen that caused the color change came from natural acids in the vegetable. Adding the baking soda neutralized the acids, causing the color to stay bright green. Amazing! Now we can make perfect bright colored green vegetables every time, right? Wrong. Look carefully at the vegetable cooked in the soda water. It is very soft and mushy. The soda also weakens the cell walls making the vegetable fall apart.
- f. So how do you make vegetables that a bright green, cooked, and not mushy?



### 3. Blanching?

- a. Together Read the Fun Bites- Greener Green Beans section of the Recipe Guide.
- b. Have you ever *blanched* vegetables before? When you *blanch*, you briefly submerge the vegetable in boiling water to partly cook the food then remove the vegetable and run cold water on them or dunk them in an ice bath to stop the cooking.
- c. Bright green vegetables are not only appealing on the plate (look yummy to eat!) but also cooking to this point you also capture all the best nutrients and vitamins that the vegetable has to offer.

### 4. Kitchen Prep

- a. Read the Grateful Green Beans 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 Grateful Green Beans!

- a. Ask students to read or describe each step.
- b. Together, follow the steps in the recipe.
- c. When the Grateful Green Beans are ready, eat, taste and share!
- d. Describe to your family and friends how you made the beans stay bright green and not mushy!



## **Lesson 2: Thanksgiving Meatballs and Harvest Celebrations Around the World**

Activity Time: 90 minutes

### **Learning Outcomes**

- Students will learn national icons such as the flag of different countries.
- Students will distinguish between land and water on maps and locate general areas referenced in historical legends and stories.
- Students will identify the purposes of, and the people and events honored in, commemorative holidays, including the human struggles that were the basis for the events.
- Students will describe how location, weather, and physical environment affect the way that people live, including the effects of their food and recreation.
- Students will recognize similarities and differences of earlier generations on such areas as work and festivals.
- Students will make Thanksgiving Meatballs to share with their family.

### **Materials**

- Recipe guide, ingredients, and tools listed within.
- World map or atlas.
- Harvest Festivals Around the World Worksheet
- Optional:
  - Books about festivals
  - Individuals to interview that know about different festivals or cultures
- *Websites consulted to create this lesson*
  - [www.cde.ca/gov](http://www.cde.ca/gov)
  - <http://travel.nationalgeographic.com/travel/top-10/harvest-festivals/>
  - <https://www.telc.net/en/about-telc/news/detail/discover-the-coolest-harvest-festivals-from-around-the-world.html>
  - <http://distractify.com/uncategorized/2014/11/25/thanksgiving-around-the-world-1197799408>

### **I. Introduction - Discussion**

- a. Q. What does harvest mean? A. The process of reaping crops, usually that are ripe and ready to eat.
- b. Why is harvest time important? Is it as important now as it used to be?



Not long ago, seasons controlled our lives much more than they do today. There was one time of year that was crucial to our survival: the harvest.

Harvest time was not only a celebration of the crops, but it also foretold the future. At harvest time, people would know whether they had enough food to survive the winter.

In ancient times, special harvest festivals emerged to celebrate the harvest. For example, the Ancient Celts lit bonfires, foretold the future, and left food out for the deceased on October 31<sup>st</sup>.

In most cultures today, round-the-year availability of food, means many of us have lost touch with the rhythm of the harvest.

## 2. Harvest Festivals Around the World?

Many countries and cultures around the world celebrate their harvest season in a variety of ways.

- a. Read the Fun Bites- Giving Thanks Around the World with students.
- b. Find these countries on a world map or in an atlas.
- c. Discuss when the celebrations take place. What month? What season? Why does the time of seasons vary around the world?
- d. Compare the Festivities from one celebration to the rest. What do all of the celebrations have in common? Why do you think those things are important to people regardless of where they live?

## 3. Harvest Celebration in \_\_\_\_\_?

Students will have an opportunity to research a Harvest Celebration of their choice and then share what they learned with their classmates, friends, and family. Recommended websites are provided, but any other research tool can be used.

- a. **Choose a harvest celebration:**
  - i. Sukkot- Jewish Festival of Harvest
    1. <http://www.bje.org.au/learning/judaism/kids/holydays/sukkot.html>
    2. <http://www.reformjudaism.org/celebrate-sukkot-shalom-sesame-learning-about-sukkah-and-enjoying-beauty-nature>
  - ii. Mehregan- The Persian Festival of Autumn
    1. <http://www.iranonline.com/festivals/mehregan-english/>
    2. <http://en.iranwire.com/features/6064/>
  - iii. Indonesian Rice Harvest Festival



1. <http://travel.nationalgeographic.com/travel/top-10/harvest-festivals/>
  2. <http://www.dailymail.co.uk/news/article-2217619/Bull-throttle-Daring-Indonesian-farmers-celebrate-end-rice-harvest-spectacular-cow-racing-festival.html>
- iv. Itel'men Tribal Harvest Festival- Northern Russia
1. <http://2camels.com/itelmen-tribal-harvest-festival> (more difficult read)
  2. <https://www.telc.net/en/about-telc/news/detail/discover-the-coolest-harvest-festivals-from-around-the-world.html>
- v. Baisakhi- India
1. <http://www.ibtimes.co.uk/vaisakhi-2015-origins-history-behind-sikh-festival-1496121>
  2. <http://mytashan.com/events/baisakhi-festival-brunch-celebration/>
- vi. Samhain- Gaelic and Celtic Festival
1. <http://holidays.mrdonn.org/samhain.html>
  2. <http://www.loc.gov/folklife/halloween.html>
- vii. Yam Festival- West Africa
1. <http://www.vivienne-mackie.com/articles/holidays/family/yam.html>
  2. <http://www.african.net/newyam.htm>
- viii. A celebration of your choosing

**b. Research and Write**

- i. Use books, the internet, or interviews to collect information. Use the Harvest Celebration Worksheet (included) to direct your research.
- ii. Write your report in the form of a:
  1. Travel brochure or poster
  2. Commercial
  3. Skit
  4. Encyclopedia entry
  5. other

**c. Optional Extensions**

- i. Make a recipe from that celebration for your family.
- ii. Create a costume that is fitting for that festival.
- iii. Find music or stories or prayers that are used at that festival.

**4. Kitchen Prep**

- a. Read the title page together.
- b. Identify and gather ingredients and tools.



- c. Discuss kitchen safety, in particular oven safety. (Visit [Raddishkids.com/pages/safety](http://Raddishkids.com/pages/safety))

## **5. Prepare Thanksgiving Meatballs**

- a. Ask children to read or describe each step.
- b. Give each child a turn measuring, grating, etc.
- c. Once the Thanksgiving Meatballs are ready eat, taste and share!
- d. While you are eating your Thanksgiving Meatballs share with your friends and family about another Harvest Festival that you have learned about.





### **Lesson 3: Homemade Dinner Rolls and Bread- Fluffy or Flat?**

Activity time: 45 minutes

#### **Learning Outcomes**

- Students will learn that sources of stored energy take many forms, and food is one of them.
- Students will experiment to discover when two or more substances are combined, a new substance may be formed with properties that are different from those of the original materials.
- Students will predict the outcome of a simple investigation and compare the result with the prediction.
- Students will learn that yeast is a living organism.
- Students will discover that yeast is what makes bread fluffy.
- Students will identify many kinds of bread that are flat.
- Students will make Homemade Dinner Rolls.

#### **Materials**

- Recipe guide, ingredients and tools listed within.
- Magnifying glass
- Yeast Experiment Materials
  - 1 packet of active dry yeast
  - 1 cup very warm water
  - 2 Tablespoons of sugar
  - A measuring cup with a spout or a cup and a funnel
  - A balloon
  - A small 500 ml water bottle
- Optional
  - A timer
  - String
  - A ruler
  - Pen and paper for recording.

*Sites consulted for this lesson plan:*

- [www.exploratorium.edu/cooking/bread/yeast\\_temp/html](http://www.exploratorium.edu/cooking/bread/yeast_temp/html)
- <https://en.wikipedia.org/wiki/Flatbread>
- [www.chabad.org](http://www.chabad.org)



- [http://www.education.com/activity/yeast\\_is\\_alive\\_kinder/](http://www.education.com/activity/yeast_is_alive_kinder/)
- <http://pbskids.org/zoom.activities/sci/yeast.html>

Experiment adapted from:

- [www.tinkerlab.com/yeast-sugar-experiment/](http://www.tinkerlab.com/yeast-sugar-experiment/)

## 1. Introduction

- Ask your students if they know what yeast is?
- Empty out a packet of yeast onto a dark plate or piece of paper. Have students observe the yeast with all of their senses. What do they notice?
- Do they think yeast is alive? Why or why not? Do you think it could come to life?
- Conduct the following experiment to see.

## 2. The Science of Yeast

- Let students know that they will be conducting an experiment to observe what yeast can do.
- Have students predict what will happen when they mix the ingredients together. Why?
- Conduct the Experiment
  - Add the packet of yeast and the sugar to the cup of warm (not hot) water and stir. What does the mixture look like? Smell like?
  - Once the yeast and sugar have dissolved, pour the mixture into the bottle. You may start to see bubbles in the water. Why do you think bubbles are appearing?
  - Stretch the balloon over the mouth of the bottle, and sit back to observe.
  - Why do you think the balloon is inflating? Do you think the balloon will continue to grow? Why or why not? What do you think is causing the balloon to blow up?
  - Extensions
    - Older students can set a timer and see how long it takes for the yeast reaction to fill the balloon.
    - Older students can use a string and a ruler to measure the growth of the balloon at regular time intervals.
    - Older students can create a graph to show the growth of the balloon over time.



### Why did the balloon inflate?

Yeasts are one-celled plants that are distant cousins of mushrooms. Yeast does not contain chlorophyll so it can't make its own food. When there is no food nearby, yeast becomes dormant, or goes to sleep. Yeast will wake up if they have food to eat (like sugar) and a warm environment (like warm water). Now the yeast is active! As the yeast eats the sugar it "burps", making carbon dioxide which is a gas. The gas is lighter than the liquid in the bottle so it rises up in the bottle and gets trapped by the balloon.

### 3. Some Breads are Fluffy

- a. Read the Fun Bites- Bread Making 101 with students. Note how the yeast is the secret to success.
- b. Check the Kitchen Tips as well. It tells you what to do if your yeast is not active. One reason your yeast may not be active is the temperature of the water you used. See this chart to explain [www.exploratorium.edu/cooking/bread/yeast\\_temp/html](http://www.exploratorium.edu/cooking/bread/yeast_temp/html).
- c. Remember not all breads rise up. Some of them have no yeast in them and therefore they stay flat.

### 4. Some Breads are Flat: why?

Flatbread has been around ever since Neolithic times when humans picked grain and ground it mixed with water and heat. You could say that flatbread was one of the world's first processed foods!

Flatbread is made with flour, water and salt. Most are unleavened which means they are made without yeast. There are flatbreads in many cultures all around the world. For an extensive list see <https://en.wikipedia.org/wiki/Flatbread>.

- a. **Religious reasons:** For example, Matzah is important in the Jewish religion at Passover. For a video on why Matzah is a flatbread and how it is made (4:13) [www.chabad.org/multimedia/media\\_cdo/aid/2611814/jewish/The-Story-of-the-Matzah.htm](http://www.chabad.org/multimedia/media_cdo/aid/2611814/jewish/The-Story-of-the-Matzah.htm)
- b. **Convenience:** For example, Injera, a spongy sour flatbread from Ethiopia and Eritrea, is used to scoop up meat and vegetable stews, instead of silverware. Injera also lines the tray the food is served on, soaking up the sauces of the meal. When this edible plate is eaten the meal is officially over. To learn more about how injera is made and the flour (Teff) that is used, you can watch: Making Injera- Teff Flour Addis Ababa Ethiopia (3:52) <https://www.youtube.com/watch?v=CZvX3Dfim0Y> or How to Make Injera Ethiopian Flatbread



(3:38) <https://www.youtube.com/watch?v=otZiMj68PIg>

- c. Optional: Choose a flatbread from the Wikipedia list above and find out how it is made, how it is eaten, and why it is flat?
- d. Do you prefer fluffy or flat bread? What particular kind? Why?

#### 5. **Kitchen Prep**

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

#### 6. **Prepare Homemade Dinner Rolls**

- a. Ask children to read or describe each step.
- b. Give each child a turn, measuring, stirring etc.
- c. Don't forget to pause at Step 1 to make sure that your yeast is active.
- d. Once your dough has risen and baked, gather together with your friends and family to enjoy your Homemade Dinner Rolls. Eat, taste and share!
- e. While your friends and family are enjoying your light and airy Homemade rolls you can explain to them what makes them so fluffy. You may also tell them about some kinds of breads that are made without yeast.

## Harvest Festivals Around The World

1. What is the name of the festival or celebration?

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2. When does the festival take place? What season is it in? Why?

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3. Where is the festival? What country? Province/state/city? Why there? Locate on a map.  
Find the flag.

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4. How do the local people celebrate? Who is involved? Is there music? Costumes?  
Animals? Performances?

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5. Are there special foods served? Is there a particular ingredient? Can you find a recipe  
that is made for the festival?

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6. Is there anything else that is really interesting about this harvest festival?

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## Green Vegetable Experiment Observation Sheet

### I. Draw

Initial Observation	After a few seconds in boiling water	After 15 minutes in boiling water



### 2. Write

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3. In your own words, what happened to the vegetable from beginning to end?

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