FIRESIDE FEAST
Homeschool Lesson Plan

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 FIRESIDE FEAST box, this lesson plan divides your box into three 45-90 minute lessons. You can use these lessons for students from pre-K – middle school and adapt them to suit your needs. Depending on your timeframe, child's age, and their engagement, these lessons can be taught together or separated.

Please refer to the curriculum provided in your box: recipe guides, activity card, and introduction card.

Happy cooking! Happy learning!

Lesson #1: COZY MINESTRONE SOUP
& FIGHT FOR GOOD HEALTH WITH PHYTONUTRIENTS
Activity Time: 60 minutes

LEARNING OUTCOMES

- Students will **discuss** the concept of a balanced diet.
- Students will **define** what "eating a rainbow" of colors from fruits and vegetables means.
- Students will **discover** the benefits of eating a variety of fruits and vegetables.
- Students will **brainstorm** as many fruits and vegetables of each color as they can.
- Students will **learn** what a phytonutrient is and how it helps their body.
- Students will **read** and **practice** with the **Featured Culinary Skill** - Guide to Knife Cuts.
- Students will **make** and **share Cozy Minestrone Soup.**

FIGHT FOR GOOD HEALTH WITH PHYTONUTRIENTS

Teacher Prep:

- Collect Materials:
  - Recipe Guide, tools and ingredients listed
  - Paper or colored paper
  - Markers, pencils
  - Timer
  - Phytonutrient Chart (included – see page #17)
  - Eat a Rainbow Everyday (included – see page #18)
- Watch
  - Benefits of Eating The Rainbow (2:34) https://www.youtube.com/watch?v=R0ONJbqHtGw

Lesson:

- Introduction:
  - Ask: Do you know the colors of the rainbow?
    - List each of the colors that they come up with on the top of a separate piece of paper or lay out pieces of different colored paper as they name them.
  - Challenge the students to brainstorm as many fruits and vegetables that they can for each color.
    - Note: For fruits and vegetables, you can combine orange and yellow together, and combine indigo and violet into purple.
    - Brainstorm one color at a time. Set a timer for 2 minutes.
    - Assign one student per color to be scribe or take dictation for younger students.
    - Ask: Which color won? (Which color had the most entries?)
    - Post the brainstorm sheets in the room and throughout the course of the lesson add any new ideas.
  - Ask :
    - Has anyone eaten any fruits or vegetables today?
    - What colors were they?
    - Has anyone heard the saying that we need to eat a rainbow?
    - What do you think that means? Why would it be important to eat different colors of food?
  - Share: We need to eat as many different colors of fruits and vegetables as we can every day because each color has different vitamins to help us stay healthy.
  - Tell your students that fruits and vegetables not only provide essential vitamins, minerals, and fiber that keep our bodies working, but they are also linked to health prevention benefits including decreased risk of heart disease, improved memory, and lowered blood sugar levels.

        - Many of these benefits are attributed to *phytonutrients* (also sometimes called phytochemicals) which are substances in plants that are not recognized as a vitamin or a mineral but still provide health benefits.
    - **Inform** the class that today they are going to **learn** about how phytonutrients are connected to colors, how they help fight to keep their bodies healthy, and which foods you can find them in.

- Background Information: What are Phytonutrients and How do they Fight for your Health?
    - **Share:** Plant foods contain thousands of natural chemicals. These are called phytnonutrients or phytochemicals. "Phyto" refers to the Greek word for plant. These chemicals help protect plants from germs, fungi, bugs, and other threats.
        - Unlike vitamins and minerals found in plants. phytonutrients aren't essential for keeping you alive. But when you eat or drink phytonutrients, they may help prevent disease and keep your body working properly.
        - More than 25,000 phytonutrients are found in plant foods.
    - **Show** students the Phytonutrient Chart (included – see page #17)
        - Additional resources:
            - Tables and lists of phytonutrients by color: http://bioflourish.com/why-i-count-colors-not-calories/
            - Kid-friendly infographic: http://www.ok-pharmacy.com/blog/5-colors-of-phytonutrients-infographic/
        - **Watch** (optional):
            - Older Students- Benefits of Eating The Rainbow (2:34) https://www.youtube.com/watch?v=R0ONJbqHtGw
            - Younger Students- Eat the Rainbow with Bruce and Charlotte (2:40) https://www.youtube.com/watch?v=-iFrSKNyvfU

- Activity Instructions:
    - Challenge students to **track** the colors of food that they eat during the upcoming week.
    - **Provide** students with the Eat a Rainbow Everyday chart (included – see page #18)
        - Younger students can make a **mark** every day when they eat a color of food.
        - Older students can **list** names of the fruits or vegetables eaten.
            - Optional: Make a separate list of the phytonutrients that they are ingesting.
    - After a week have the students **bring** their charts to class and **share** their results.
    - Ask:
        - How did you do?
        - Were they able to eat all the different colors of fruits and vegetables? If not, which ones were hard to fit in?

- Have students **share** their favorites of each color. Maybe they can inspire each other with different preparations.

Extension:

- **Create a game** where one player suggests an illness or situation and the other recommends what fruits or vegetables would be good to eat to help the body fight.
  - For example:
    - Player 1- my knuckles and joints are really hurting me.
    - Player 2- anthocyanins and flavonoids are good at providing anti-inflammatory benefits. You can find those in blue and purple fruits and vegetables like blueberries and eggplant.
- **Collect** weekly grocery flyers or food magazines. Have students **cut and glue** a food rainbow **collage**.

COOKING COZY MINESTRONE SOUP

Kitchen Prep

- Read the COZY MINESTRONE SOUP recipe card together.
- Identify and gather ingredients.
- Gather tools.
- Read the featured Culinary Skill - **Guide to Knife Cuts.**
- Discuss kitchen safety, specifically knife safety. (Visit www.Raddishkids.com/pages/safety)

Prepare COZY MINESTRONE SOUP

- Ask children to read or describe each step.
- Together, follow the steps in the recipe.
- Give each child a turn to smash, cut into rounds, drain.
- When the COZY MINESTRONE SOUP is ready, eat, taste and share!
- While your friends and family are eating, tell them about Eating the Rainbow, and why it is important to eat lots of different colors of food. Tell them about phytonutrients and how they fight to make your body healthy. You could challenge your friends and family to the Fruit and Vegetable brainstorm that you did in the introduction!

RESOURCES

- Books
  - Give it a Go, Eat a Rainbow by Kathryn Kemp Guylay
  - I can eat a Rainbow by Annabel Karmel
  - Hoot the Owl and the Vegetable Rainbow by Jon Stiansen
  - Phytochemicals: What You Should Know- A Quick Booklet about Phytonutrients by Sarah Sparrow
  - Phytonutrients: Medicinal Nutrients Found in Food by Beth M. Ley
- Websites
  - Tables and lists of phytonutrients by color: http://bioflourish.com/why-i-count-colors-not-calories/
  - Kid-friendly infographic: http://www.ok-pharmacy.com/blog/5-colors-of-phytonutrients-infographic/
  - http://www.aicr.org/assets/docs/pdf/healthykids/taste-a-rainbow-lesson-plan.pdf
  - http://caih.jhu.edu/assets/documents/Spring_Lesson_1_-_Grade_4.pdf
- Videos
  - Benefits of Eating The Rainbow (2:34) https://www.youtube.com/watch?v=R0ONJbqHtGw
  - H-E-B: Eat the Rainbow with Bruce and Charlotte (2:40) https://www.youtube.com/watch?v=-iFrSKNyvfU

Lesson #2: ROSEMARY FOCACCIA
& HISTORY OF FIRE
Activity Time: 60 minutes

LEARNING OUTCOMES

- Students will **share** their ideas about some of the most important technological and cultural innovations/inventions of the earliest humans.
- Students will **think** about how early humans used fire.
- Students will **ponder** and **suggest** how they think that early humans first discovered how to use fire.
- Students will **create, rehearse, and perform** a short skit which dramatizes the discovery of fire.
- Students will **read** and **practice** with **Featured Culinary Skill** – Kneading Dough
- Students will **make** and **share** Rosemary Focaccia.

HISTORY OF FIRE

Teacher Prep:

- Collect Materials:
  - Recipe Guide, tools and ingredients listed
- Watch:
  - The Discovery of Fire (4:30) https://www.youtube.com/watch?v=v3ax5W_TrOo
  - Mankind the Story of All of Us: Fire History (2:31) https://www.youtube.com/watch?v=Ygpzm0S_rPQ

Lesson:

- Introduction: Importance of Innovation and Invention
  - Ask: What do you think some of the most important technologies (things) that early humans innovated (used) or invented (created)?
  - If students are stuck you could suggest things like:
    - The creation of containers so that water could be carried away from a water source.
    - The fashioning of rocks into knives or spears.
  - Tell students that today they will be focusing on man's discovery of fire. They will get to discuss early uses of fire and tell their own story of how they think the earliest humans first found fire.

- Background Information: Early Uses of Fire
  - Ask: How do you think early humans used fire?
    - Have students share their ideas with the class.
  - Some important ones are:
    - Cooking
      - Meat is easier to digest and cooking prevents some diseases.
      - Allows nutrition to be more easily absorbed into the body leading to larger brain size.
    - Protection
      - Fire can be used as a weapon to protect against predators.
      - Fire provides protection from the cold, which allowed humans to migrate over a much larger percentage of the Earth's surface.
    - Light
      - Fire provides light, which allows the working day to be extended.
      - Fire may have led to "leisure time" and perhaps the creation of art or other inventions.
    - Gathering
      - People coming together in groups around fires for storytelling, teaching, and understanding one another.
  - Watch the video

        - Mankind the Story of All of Us: Fire History (2:31) https://www.youtube.com/watch?v=Ygpzm0S_rPQ

- Activity Instructions: "Man Finds Fire" - A Dramatization
    - **Inform** students that they are going to prepare a short skit or play which dramatizes the earliest human discovery of fire.
    - **Tell** them that they cannot speak. Grunting or gibberish is allowed.
    - **Explain** that they will have to use their body language, position, and facial expressions to:
        - **Show** the location or landscape that the discovery takes place in.
        - **Show** the moment of discovery and why it is momentous or important.
        - **Demonstrate** how their character feels about the discovery.
    - Stress the importance of **listening** to everyone's ideas in the group. **Discuss** how they can **compromise or combine** ideas so that everyone can be represented.
    - **Give** the students time to:
        - **share** ideas
        - come up with a **plan** for a beginning, middle, and end of their skit
        - **rehearse** it through a couple of times
        - **perform** for the rest of the class
        - **provide feedback** about what worked and didn't work in the telling of the story
    - Optionally, watch this cartoon about The Discovery of Fire (4:30) https://www.youtube.com/watch?v=v3ax5W_TrOo

Extension:

- Have students **research** other early innovations and dramatize those discoveries.
- **Cook** something over a fire or gather around a fire to tell stories or share something that you have learned.
- To **learn** more about Homo Erectus visit: https://kidspast.com/world-history/homo-erectus/

COOKING ROSEMARY FOCACCIA

Kitchen Prep

- Read the Rosemary Focaccia recipe card together.
- Identify and gather ingredients.
- Gather tools.
- Read the **Featured Culinary Skill – Kneading Dough.**
- Discuss kitchen safety. Specifically, Oven safety (Visit Raddishkids.com/pages/safety).

Prepare Rosemary Focaccia

- Ask children to read or describe each step.
- Together, follow the steps in the recipe.
- Give each child a turn to measure, knead and sprinkle.
- When the Rosemary Focaccia is ready, eat, taste and share!
- While your friends and family are eating, tell them about the earliest human uses for fire and perform your skit.

RESOURCES

- Books
  - Catching Fire: How Cooking Made us Human by Richard Wrangham
  - TIME for Kinds Big Book of When: 801 Facts Kids Want to Know
- Websites
  - https://study.com/academy/lesson/how-did-stone-age-man-make-fire-discovery-importance-facts.html
  - https://earlyhumans.mrdonn.org/fire.html
  - https://kidspast.com/world-history/homo-erectus/
- Videos
  - The Discovery of Fire (4:30) https://www.youtube.com/watch?v=v3ax5W_TrOo
  - Mankind the Story of All of Us: Fire History (2:31) https://www.youtube.com/watch?v=Ygpzm0S_rPQ

Lesson #3: HOT COCOA CUPCAKES
& LEARNING ABOUT LEAVENERS
Activity Time: 90 minutes

LEARNING OUTCOMES

- Students will **share** what they think science has to do with cooking.
- Students will **discuss** why leavening is important in baking.
- Students will **learn** that the properties of substances can change when they are mixed or heated, or when liquid is added.
- Students will **follow directions** for a scientific investigation.
- Students will **learn the difference** between baking soda and baking powder.
- Students will **read** and **practice** with **Featured Culinary Skill** - Dry Measuring Skills.
- Students will **make** and **share** Hot Cocoa Cupcakes.

LEARNING ABOUT LEAVENERS

Teacher Prep:

- Collect Materials:
  - Recipe Guide, tools, and ingredients listed
  - Baking soda and baking powder for observation
  - Simple Experiment
    - Baking soda
    - Baking Powder
    - Two cups, test tubes, or containers
    - A plastic table cloth or newspapers for easier clean up
    - Water
  - Additional Materials for Complex Experiment
    - Multiple cups, test tubes, or containers
    - Variety of liquids:
      - Vinegar
      - Juice
      - Baking soda solution (baking soda dissolved in water)
      - Rubbing alcohol - warning to children not to ingest!
      - Liquid soap
- Watch (optional)
  - The Chemistry of Cookies- Stephanie Warren (4:29) https://www.youtube.com/watch?v=n6wpNhyreDE

Lesson:

- Introduction: Baking Science
    - **Ask:** How do you think baking cookies, or grilling meat, or making popcorn is a science?
        - Allow students to freely share their ideas without judgement or comment.
        - **Help students** to distill their examples down to concepts like:
            - Making things rise
            - Making things explode
            - Helping things to hold their shape
            - Things changing from one state to another (liquid cream to solid butter)
    - **Read** with your students the "Baking Science" section of the Hot Cocoa Cupcakes recipe guide.
        - **Discuss** the different roles that each ingredient takes in creating a successful baked good.
    - **Tell** students that today they will be taking a closer look at a couple of ingredients that are found in most cakes and cookies: baking soda and baking powder. Let them know that they will learn the difference between the two and conduct some experiments to learn how they work.

- Background Information: Leaveners and How They Work
    - **Bring** a container of baking powder and a box of baking soda to the table.
    - Have students **observe** with all of their senses. (In this case, it is ok to taste.)
    - **Have** students **share** what the two substances have in common or where they differ.
        - Optionally, **create** a Venn **diagram or a chart** listing the qualities of each substance.
    - **Share:**
        - What is baking soda?
            - Baking soda is basically ground-up rock!
            - If you keep it cool and dry it lasts indefinitely.
            - It has only one ingredient: sodium bicarbonate.
        - What does baking soda do?
            - Baking soda is a *base* and it reacts when it comes into contact with something *acidic*.
                - In recipes you will often find it paired with acidic ingredients like buttermilk, yogurt, vinegar, molasses, maple syrup, pumpkin, or lemon juice.
        - How does baking soda affect baked goods?
            - The reaction between baking soda and an acidic ingredient produces carbon dioxide (CO_2) in the form of bubbles. These bubbles make the dough or batter rise. This process is called "chemical leavening."

        - Baking soda reacts immediately when it comes in contact with an acid.
        - Recipes using baking soda often bake up darker, and are more crisp.
        - If you put too much in a recipe it can have a bitter, soapy taste.
    - How does baking powder differ from baking soda?
        - For many baking recipes, you want an extended reaction, so that the rising doesn't take place all at once (like it does with baking soda).
        - Baking powder fixes this problem because it is "double acting" – it has different ingredients that create CO_2 gas at different stages of the baking process.
    - What is baking powder?
        - Baking powders contain sodium bicarbonate (just like baking soda).
        - Baking powder also contains two acids:
            - Monocalcium phosphate – This acid only reacts with sodium bicarbonate when wet. As soon as the baking powder is stirred into a wet dough or batter, the two ingredients begin to react, releasing bubbles of CO_2 and causing chemical leavening.
            - Sodium acid pyrophosphate or sodium aluminum sulfate – These acids only react with sodium bicarbonate when they are both: A) wet (i.e., stirred into the batter) and B) hot.
    - How does baking powder work?
        - Baking powder allows your baked goods to rise twice – once when liquid is added and once when put in the oven. This means that the batter rises for a longer period of time, making lots of bubbles (and a fluffier baked good).

- Experiment Instructions: Baking Soda vs. Baking Powder
    - Simple Experiment- Powders in Water
        - Collect materials (as listed above).
        - Put an equal amount of water in each container.
        - Add a teaspoon of baking soda to one container and a teaspoon of baking powder to the other.
        - Observe what happens.
        - Ask: Why do you think that the baking soda didn't react and the baking powder did?
            - Remember that baking soda has only one ingredient, sodium bicarbonate. It is a base. There is nothing else in baking soda. It needs an acid to react with. Water is neutral, neither an acid nor a base, so nothing happens.

            - Baking powder, however, has components that are acids and components that are bases, so they react to form gaseous carbon dioxide (CO_2) and lots of foaming bubbles!
    - Complex Experiment- Powders in Liquids that are Bases and Acids
        - Collect materials (as listed above).
        - Ask: Now that you know how baking soda and baking powder react in water, what do they think will happen in other liquids? (Some of which will be basic and some acidic.)
        - Set out two sets of test tubes or containers.
        - Add an equal amount of vinegar, baking soda solution, rubbing alcohol, liquid soap, and juice in each container. Create two sets.
        - Record student's hypotheses for each test tube.
        - Run the experiment.
            - Add a teaspoon of baking soda to each one. Record reactions.
            - Add a teaspoon of baking powder to each one. Record reactions.
        - Discuss results:
            - Which ones reacted with baking soda? Why?
            - Which ones reacted with baking powder? Which ones reacted the most?
            - Did you notice that baking soda and vinegar give a huge, fast reaction but then it fizzles out? While baking powder gives a long and sustained reaction? That's why we want it for baking nice fluffy cakes!

Extension:

- Experiments with other leaveners:
    - Yeast
        - Blow up a Balloon With Yeast: https://sciencebob.com/blow-up-a-balloon-with-yeast/
        - https://redstaryeast.com/science-yeast/yeast-experiments/
    - Eggs
        - https://www.wired.com/2012/07/pancakes-served-with-a-side-of-science/
        - https://www.foodandwine.com/fwx/food/baking-with-eggs

COOKING HOT COCOA CUPCAKES

Kitchen Prep

- Read the Hot Cocoa Cupcakes recipe card together.
- Identify and gather ingredients.
- Gather tools.
- Read the **Featured Culinary Skill** - Dry Measuring Skills
- Discuss kitchen safety. Specifically, Hand Washing safety (Visit www.Raddishkids.com/pages/safety).

Prepare Hot Cocoa Cupcakes

- Ask children to read or describe each step.
- Together, follow the steps in the recipe.
- Give each child a turn to measure, crack, and decorate.
- When the Hot Cocoa Cupcakes are ready, eat, taste and share!
- While your friends and family are eating, tell them how you got their cupcakes to be so light and fluffy! Explain to them the difference between baking soda and baking powder.

RESOURCES

- Websites
  - https://www.steampoweredfamily.com/activities/baking-soda-vs-baking-powder-science-experiment/
  - https://sciencebob.com/blow-up-a-balloon-with-yeast/
  - https://redstaryeast.com/science-yeast/yeast-experiments/
  - https://www.wired.com/2012/07/pancakes-served-with-a-side-of-science/
  - https://www.foodandwine.com/fwx/food/baking-with-eggs
  -
- Videos
  - The Chemistry of Cookies- Stephanie Warren (4:29) https://www.youtube.com/watch?v=n6wpNhyreDE

Phytonutrient Chart

Color	Phytonutrients Associated with Color	Health Benefit Associated with Phytonutrients	Example Fruits and Vegetables
Red	• Lycopene • Anthocyanins	• **Strengthening** collagen proteins in the body • **Preventing** lung, prostate and stomach cancer	• Strawberries • Tomatoes • Watermelon • Cherries • Red grapefruit
Orange	• Beta-carotene • Liminoids	• **Protecting** against chronic bronchitis, asthma, and emphysema • **Reducing** the risk of cataracts and lung cancer • **Decreasing** cholesterol levels	• Carrots • Squash • Citrus • Melons
Yellow	• Liminoids • Beta-carotene • Zeaxanthin	• **Protecting** against chronic bronchitis, asthma, and emphysema • **Reducing** the risk of cataracts • **Decreasing** cholesterol levels • **Protecting** vision • **Preventing** tumors and cancer in the colon, breast, and prostate glands	• Yellow peppers • Corn • Legumes
Green	• Lutein • Saponins • Glucosinolates	• **Preserving** eyesight • **Maintaining** heart and skin health • **Increasing** enzyme activity to detoxify carcinogens • **Preventing** cancer and lowering lipid levels	• Spinach • Collard greens • Broccoli • Tomatillos
Blue/ Purple	• Anthocyanins • Flavonoids	• **Strengthening** collagen proteins • **Preventing** cancer • **Providing** anti-inflammatory and analgesic benefits	• Blueberries • Grapes • Plums • Grapes • Raspberries • Eggplant

Eat a Rainbow Every Day!

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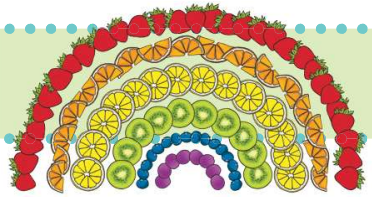
	Red	Orange & Yellow	Green	Blue & Purple	White	How many colors did I eat today?
Sunday						
Monday						
Tuesday						
Wednesday						
Thursday						
Friday						
Saturday						

Total:



Challenge: How can you improve your weekly score?