



## **Mangia Mangia 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 Mangia Mangia box, this lesson plan divides your box into 4 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 cards, skill card, and introduction card. Happy cooking! Happy learning!

### **Lesson 1: Herbed Focaccia and The Science of Gluten**

Activity Time: 60 minutes

#### **Learning Outcomes**

- Students will learn that gluten is a protein.
- Students will discover how different flours lead to different outcomes when baking.
- Students will conduct an experiment to isolate gluten from the other components in flour.
- Students will make Herbed Focaccia and be able to explain how gluten affects the bread.

#### **Materials**

- Two or more kinds of flour (whole wheat, all-purpose, pastry, bread)
- Bowls (one for each kind of flour)
- Liquid measuring cup
- Dry measuring cup
- Water
- Clock or kitchen timer.
- Access to the kitchen sink



- Kneading Skill Card
- Recipe guide, ingredients, and tools listed within.

## 1. Introduction

- a. Ask students if they know what gluten is? Do they know where to find it? Or what its job is? How is gluten formed?
- b. Facts about gluten that you can share:
  - Gluten is a protein in wheat and flour that holds dough together, like glue.
  - Gluten is almost a pure protein. Many vegetarians use it to replace meat in their diets. They use products such as *seitan* which is gluten mixed with soy sauce, ginger, garlic and seaweed.
  - Gluten is both *plastic* -- something that's able to change shape, and *elastic* -- something that's able to spring back into place.
  - When added to flour, fats, like butter, margarine, or lard, interfere with the way the gluten proteins interact with water. This makes short strands of gluten, which is what makes flaky pastries and crusts.

## 2. The Gluten Stands Alone Experiment

### a. Exploration

Provide students with different kinds of flours. Let students look, feel, smell the different flours. Engage in a conversation about comparing the flours. You can make a chart if you like.

### b. Experimentation

1. Measure out 1 cup of each of the flours into separate bowls. Remember which flour is in which bowl or label them.
2. Slowly add about  $\frac{1}{2}$  to  $\frac{3}{4}$  cup of water to the flour in each bowl. Refer to the Kneading Skill Card. Knead each mixture until it forms a soft rubbery ball of dough. Let the dough balls sit for about 10 minutes.
3. Put your first bowl of dough into the sink. Cup the dough ball in your hands and gently run cold water over it. Be careful not to let the dough disintegrate. Try squeezing gently to remove the starch.
4. You should notice the water turning a milky white color as it washes away the starch in the dough. Keep pouring out the cloudy water that collects in the bottom of the bowl. Slowly, your dough ball will become a gummy, slimy network of gluten strands.
5. When the draining water is no longer milky, you'll know that all the starch in the dough is gone, leaving behind nearly pure gluten. *What changes do you notice in your dough ball?*



# rad<sup>d</sup>ish

Kitchen. Table. Family.

6. Repeat steps 3-5 with the other flour types. *How does the texture of each one change as you wash away the starch? Does it take the same amount of time for each one? Are the gluten balls all the same size, before and after rinsing?*
7. If desired, you can now try to bake your gluten balls in a 450 degree F oven for 15-30 minutes. How do they change after baking? Did they puff up? Harden? This is exactly what happens to the gluten in a loaf of bread.

c. **Explanation**

When you knead dough, you help two proteins in wheat flour, *gliadin* and *glutenin*, form gluten. Flour also has starch, sugars and enzymes that affect the nutritional value and texture of bread. In this experiment you washed away most of these other substances, leaving just the gluten in the dough. The heat of the oven creates steam which puffs up the gluten into a ball.

d. **Extend**

Older students may wish to extend their learning experience with independent research on Celiac disease and gluten-free diets.

### 3. Kitchen Prep

- a. Read the Herbed Focaccia recipe card together.
- b. Read the Kneading Skill Card
- c. Identify and gather ingredients.
- d. Gather tools.
- e. Discuss kitchen safety. Specifically, oven safety (Visit [Raddishkids.com/pages/safety](http://Raddishkids.com/pages/safety))

### 4. Prepare Herbed Focaccia!

- a. Ask children to read or describe each step.
- b. Together, follow the steps in the recipe.
- c. Discuss how the dough changes texture as it is needed. Do you notice it getting stretchy?
- d. When the Focaccia is ready, eat, taste and share!

Source: <https://www.exploratorium.edu/cooking/bread/activity-gluten.html>



**Lesson 2: Meatballs al Pomodoro and The Geometry of Circles and Spheres**  
Activity Time: 45 minutes

### Learning Outcomes

- Younger students will experience the concept of spheres and circles.
- Younger students will learn the difference between a circle (2-D) and a sphere (3-D).
- Older students will learn why the earth is not a sphere.
- Older students will learn math terminology: symmetrical, vertices.
- Older students will learn about the volume of a sphere.
- Students will observe spheres in their everyday environments.
- Students will make spherical meatballs to share with friends and family.

### Materials

#### Younger Students

- Spheres or balls of different sizes and colors (ex. ping pong, tennis, marbles etc.)
- Circles of different sizes and colors (ex. plates, clocks, lids etc)
- Construction paper
- Glue
- Optional hula hoop, or masking tape circle on the floor
- Bubble solution
- Recipe guide and ingredients and tools listed within.

#### Older Students

- Balloon
- Straws
- Coat hanger
- String
- Bubble solution
- Recipe guide and ingredients and tools listed within.

### I. Younger Students: Introduction

- a. Ask students to walk around the hula hoop or the masking tape circle and then sit down. What do they notice about the shape that they walked around?
- b. Invite the students play “see, touch, and say”. Show the children different sized balls. Tell them that they are called **spheres**. Pass the balls around and have them say the



- word sphere as they hold it. Help the students understand that the size and color of the ball doesn't matter -- it is still a sphere.
- Do the same "see, touch and say" with different size and color circles.
  - Ask the students to discuss how the circle and the sphere are alike and how they are different. Allow students to touch and explore with the shapes while they are discussing this. They will probably be able to tell you that both are round. Circle is flat. They might say that the sphere is big or fat. You can respond with "the sphere takes up space."
  - Have students go on a shape hunt around the house/park/neighborhood and point out circles and spheres that they see.

## 2. Younger Students: Art Activity

- Provide students with an assortment of paper circles and some construction paper.
- Have them make patterns or people out of the circles and then glue them down.
- Enjoy outdoor playtime with bubbles. Have students blow bubbles and remind them to use the term sphere for the shape.

## 3. Older Students: Introduction

- Ask students what they know about spheres? How are they different than a circle?
- Sphere Facts
  - It is perfectly symmetrical.
  - It has no edges or vertices (corners).
  - All points on the surface are the same distance from the center.

## 4. Older Students: Balloon/ Bubble Activity

- Blow up a balloon. What shape does it form?
- Use straws, string, coat hanger etc to create homemade bubble blowers of various different shapes and sizes.
- Blow bubbles outside using the various shape blowers. *What shape bubbles do the square and triangular blowers form? Why do you think they make a sphere?*
- What's happening?**
  - The sphere appears in nature (for example as a water drop) whenever a surface wants to be as small as possible. This is because of all the shapes (triangle, square, etc) a sphere contains the smallest surface area per volume. In other words, a sphere contains the greatest volume for a fixed surface area.
  - So, is the planet Earth a sphere?* It is nearly a sphere, except that it is squashed a little at the poles. Therefore it can be called spheroid because all points on the surface are not the same distance from the center.

## 5. Kitchen Prep

- Read the title page together.



- b. Identify and gather ingredients and tools.
- c. Discuss kitchen safety, in particular knife and stove top safety. For example, have students keep their elbows high and handles turned in when stirring on the stovetop.

#### 6. Prepare Meatballs al Pomodoro

- c. Ask children to read or describe each step.
- d. Give each child a turn cutting, measuring, mixing, etc.
- e. In step 5 ask students *what shape they are rolling their meatballs?*

#### 7. Mangia Meatballs!

- f. Once everything is cooked, it's time to eat!

### Lesson 3: Chocolate Chip Biscotti and Definitions vs. Translations!

#### Learning Outcomes

- Students will learn what a translation is.
- Students will learn what a definition is.
- Students will define some of their favorite dishes.
- Students will play a game using their definitions.
- Students will bake biscotti.

#### Materials

- Recipe guide and ingredients and tools listed within
- Pencil
- Internet for research. Suggested website: Around the World in 80 Desserts [www.thedailymeal.com](http://www.thedailymeal.com)

#### I. Introduction

- a. Ask students if they speak a second language? *Do they know any words in another language? Maybe please or thank you? Ask them if they know what “Hola” means? (hello in Spanish) Or “Merci”? (thank you in French) if they gave you the answer in English let them know that they just **translated** the word.*
- b. Ask the students if they can tell you what hello or thank you means? Could they explain it to someone who woke up one day with no memory? For example, hello is a word that we use to greet one another when we meet. If they could do this, let them know they just **defined** the word.



- c. Look at the Fun Bites Dolce Italiano section of the Chocolate Chip Biscotti Recipe Guide. Have students take turns choosing a yummy looking dessert and read the blurb beneath. Can they distinguish the difference between the translation and the definition?

## 2. Deliciousness Defined

- a. Have students choose 5 of their favorite desserts and list them on the attached worksheet.
- b. Invite each student to define his or her dessert. Refer to the Fun Bites Dolce Italiano definitions for examples.
- c. Cut each dessert and definition into a paper strip. Then fold so that you can read the definition and then flip over to see the answer. Save to play at dinner or when enjoying the Chocolate Chip Biscotti.
- d. Optional Challenge-
  - i. Provide students with the list below of international desserts and have them research translations and definitions to share.
    1. Babka (Poland)
    2. Kaab el Ghzal (Morrocco)
    3. Crème Brule (France)
    4. Arroz con Leche (Mexico)
    5. Galub Jamun (India)

## 3. Kitchen Prep

- a. Read the title page together.
- b. Identify and gather ingredients and tools.
- c. Discuss kitchen safety, in particular washing hands after handling raw eggs.

## 4. Prepare Chocolate Chip Biscotti

- a. Ask children to read or describe each step.
- b. Give each child a turn measuring, timing, mixing, etc.

## 5. Biscotti Time

- a. Eat, taste and share!
- b. While you are enjoying your biscotti, challenge your family or friends to a game of Delicious Definitions. Read the definition of a desert and see if they can guess what it is called. Or if you did the Optional Challenge read the definition of the desert and see if they can guess what country it comes from.



## **Lesson 4: Tour of Italy and Book/Artist Study of Leo Lionni**

Activity time: 90 minutes

### **Learning Outcomes:**

- Students will learn to identify the shape of the county of Italy.
- Students will learn about an artist and children's book author with Italian heritage, Leo Lionni.
- Students will read one or more of Leo Lionni's stories
- Students will explore with the artistic style of collage.
- Students will examine the map of Italy to find different cities where Leo Lionni lived.
- Students will examine the map of Italy to find different cities where different foods originated.

### **Materials:**

- Books by Leo Lionni- some titles below. These are easy to find in libraries or maybe your home bookshelf!
  - \*Frederick
  - \*Alexander and the Wind-Up Mouse
  - Swimmy
  - Fish is Fish
  - Inch by Inch
  - A Color of His Own
  - Little blue and little yellow

\*These two have mice in them which matches the recommended video, but all will work.
- Video:

This is a video of Leo Lionni showing how he makes the collage mice in his stories.  
Leo Makes a Mouse 2:19 <http://www.randomhousekids.com/brand/leo-lionni/videos/>
- Map of Italy from Mangia Mangia Raddish Box
- Materials for making Leo Lionni style collage
  - Construction paper in a variety of colors
  - Glue stick
  - White paper 8x11 or larger.
  - Optional, pastels, crayons etc to add details

### **I. Introduction**





- d. Are your students familiar with the books of Leo Lionni? If so you can talk about your favorites. If not make one or more books available to be read and explore.



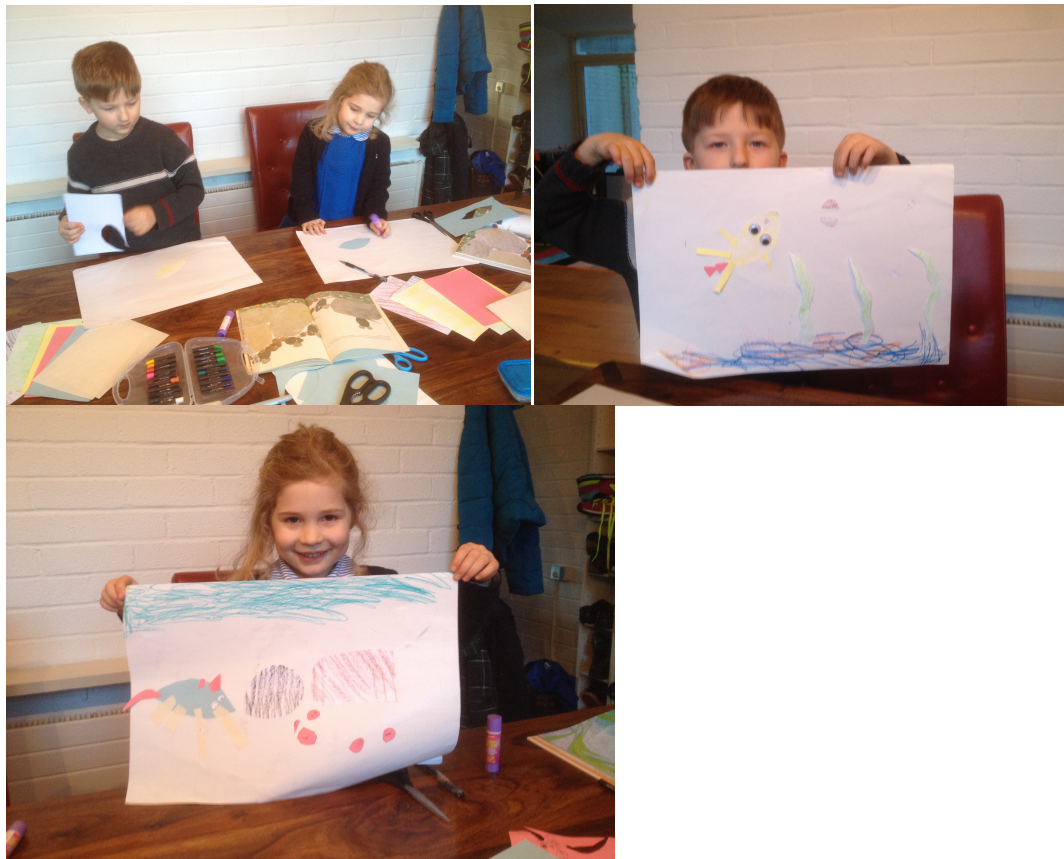
- e. What do you know about Leo Lionni?
- He was born in the Netherlands to parents of Italian origin in 1910. Grew up in Amsterdam visiting museums and teaching himself to draw.
  - After he got married he moved to Milan, Italy in 1931. Can you find that on the Italy map ?
  - He moved to America in 1939 to be an Art Director at an advertising agency.
  - He began his career as an author/illustrator of children's books in 1959. Over his career he wrote and illustrated more than 40 children's books winning many awards.
  - He moved back to Italy in 1962 where he pursued fine arts.
  - For the last 20 years of his life he split his time between Italy and New York.
  - He died in 1999 at his home in Tuscany, Italy, at the age of 89. Can you find Tuscany on the map?

*Sourced from [www.scholastic.com](http://www.scholastic.com) and Wikipedia*

## 2. Stories and Art

- a. Read Frederick, or Alexander and the Wind-Up Mouse or another Leo Lionni book. Pause often to discuss and appreciate the art. *How do they think he created the tree branch, rock etc? Who are the main characters? What did they learn in the story? What environment(s) did they live in?*
- b. Watch the video  
Leo Makes a Mouse 2:19 <http://www.randomhousekids.com/brand/leo-lionni/videos/>

- c. Have students look through Leo Lionni books and choose a page that they want to use as an inspiration for their own personal collage.
- d. Provide students with paper, glue sticks and some initial guidance in tracing or free tearing paper.
- e. Direct students:
  1. Lay out paper pieces to create their page.
  2. Glue down the character and create the environment around them.
  3. Optional add in any other details with other art media.
- f. Display the art on the wall for students to share!



### 3. **Tour of Italy Activity**

- a. Read the Tour of Italy Activity Card together.
- b. Talk about the Italian Flag. *Do you know what the stars and stripes represent on the American Flag?*
- c. Gather coloring tools and complete the Match and Draw activity on the reverse of the card.



- d. Think locally: Is your city or area known for any special kind of food? For example, cheese from Wisconsin or sour dough bread from San Francisco.

**Bonus!**

This month be sure to listen to our favorite Italian music with our Spotify playlist, available on our Bonus Bites page: [raddishkids.com/pages/mangia](http://raddishkids.com/pages/mangia)

*Deliciousness Defined*

| Name of Dessert | Definition of Dessert |
|-----------------|-----------------------|
|                 |                       |
|                 |                       |
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