



LESSON:

Go With The Grain!

GRADE LEVEL: K-6

OBJECTIVES:

- Learn about the importance of eating whole grains.
- Plant whole grains to grow in the classroom through the winter.
- Make and eat nutritious whole grain power bars.

KEYWORDS:

Whole Grain: Foods made with unrefined grains that contain all of the parts of the grain

Kernel: A whole grain food, containing the germ, bran, and endosperm

Germ: The embryo of the seed found only in whole grains

Bran: The outer layer of the grain, often rich in dietary fiber and healthy fats

Endosperm: The tissue surrounding the germ inside a seed. Often contains high levels of starch and other essential nutrients

Refined: The process of milling and removing the parts of a whole grain to change the texture, flavor, nutrition, and shelf-life of grain products like flour

SKILLS:

- Identifying parts of plants
- Making healthy food choices
- Safely handling food

OVERVIEW:

Whole grains are grown around the world and include common grains like wheat, brown rice, and barley, but also include less common foods to the North American palate like quinoa, amaranth, and teff. **Whole grains** are made with all of the parts of the grain seed (also known as the 'kernel'), including the **bran**, **endosperm**, and **germ**. Many processed foods refine grain to increase their shelf life and change their flavors and colors. Unfortunately, **refined** grains are also stripped of many of their nutrients in the process. Modern food advertising and packaging makes it hard to tell if foods are *truly* healthy or falsely claiming to be healthy.

In this lesson, students will learn about the benefits of eating whole grain foods, how to investigate food labels, look at different **whole grain** seeds, and plant **whole grains** to grow in the classroom throughout the winter. Classes may elect to measure plant growth and a plot of charts for math reinforcement.

We will also continue to learn about healthy snacking. Healthy snack foods can be great for growing and active kids, unfortunately there are many snack foods that are not. Unhealthy snacks often contain high levels of sugar, salt and fat. Fortunately, by using **whole grains**, we can make our own snack foods like **whole grain** 'power bars' that are tastier, healthier, and more fun than what is available in stores.

QUESTIONS TO CONSIDER:

- What are some great ways to get physical activity?
- How can being outside in the garden make us healthier?
- What does it mean to you to be 'healthy'?
- What else can we do besides eating more fruits and vegetables to add to our health?



MATERIALS:

PART 1 (K-2):

- *Gregory the Terrible Eater* story book

PART 1 (3-6):

- Large diagram of a kernel with parts labeled
- Examples of whole grain kernels (such as buckwheat, brown rice, and oats)
- Examples of whole grain and refined/processed flours (such as whole wheat or whole grain corn meal)

PART 2 (K-2):

- Planters
- Soil mix
- Compost
- Rye seed

PART 2 (3-6):

- Printed labels, empty boxes or wrappers from grain foods, such as rice, cereal, pasta or tortillas. Include some food items made with whole grains, and others labeled 'stone-ground', 'multi-grain', '100% wheat', 'bran', and 'enriched'.

PART 3 (ALL):

- Ingredients (see recipe)
- Large mixing bowl and spoon
- Measuring cups and spoons
- 2 9"x13" baking dishes
- Knife
- Hand sanitizer

PART I: GREGORY, THE TERRIBLE EATER

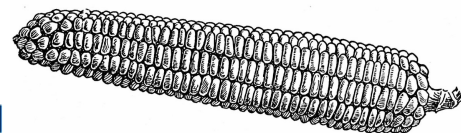
PROCEDURE (K-2):

1. Read *Gregory, the Terrible Eater* story.
2. Ask the students what Gregory the Goat needed to be healthy. What do we need to eat to be healthy?
3. Explain that one of the components of healthy eating is to try foods that have "whole grains". We're going to find some foods that have whole grains today.

PART I: THE WHOLE TRUTH

PROCEDURE (3-6):

1. Tell the students that we're going to look at the difference between refined and whole grains.
2. Whole grains are the entire grain seed or 'kernel' the bran (outer layer), germ and endosperm. During refining, most of the bran is removed, meaning that most of the fiber, vitamins and minerals are also removed. While some vitamins and minerals are added back to refined grains, whole grains have more fiber and minerals.
3. Show the different parts of a kernel on a large piece of paper.
4. Show the students examples of whole grain kernels, whole grain flour, and processed or white flours.



PART II: PLANT A GRAIN

PROCEDURE (K-2):

1. Explain that we can grow certain whole grains in the garden for eating, to beautify garden and to improve the soil. Buckwheat and rye are both great for soil improvement. Corn is a common whole grain grown in the summer.
2. If planting indoors, set up planters, soil mix, compost, and seeds before the class begins. Explain that today we are going to plant a whole grain to grow indoors during the winter, as it is too cold to grow outdoors!
3. Review the needs of growing plants (soil or compost for nutrients, sunlight and water).
4. Have the students line up to fill their planters with the soil mix compost, and three rye seeds. After they plant their seeds, place them on the side of the room until the end of the lesson (they should water them back in their classroom so they can start to grow).
5. If planting outdoors, prep rows or beds ahead of time. Easy to grow whole grain options include corn, buckwheat, and rye.

PROCEDURE (3-6):

1. Ask the student to think of any grains they have grown in the garden in the past.
2. Tell the students that we're going to learn to tell the difference between foods which have refined and whole grains.
3. Distribute labels from grain foods, such as rice, cereal, pasta or tortillas. Make sure there are plenty of whole-grain food wrappers to compare. Make sure some labels list a whole grain as first ingredient.
4. Ask students if they have a wrapper which contains whole-grain products. How can they tell? The ONLY way to know if a product contains whole grains is to read the ingredient list.
5. Show students where to look on the label for ingredient information. Remind them to look for the word "whole" listed first. Examples are 'whole-grain', 'whole-wheat', 'whole corn', 'whole-oat', etc. Ask if they can see something on the package that might mislead the consumer to believe it is a whole-grain product. Look for words such as multi-grain, 100% wheat, stone-ground, cracked wheat, seven-grain, or bran, which are not necessarily whole-grain products, though they may be healthier foods than other products. The only way to know for sure is to read the ingredients labels!

PART II: GO WITH THE GRAIN! (CONTINUED)

6. Before the class begins, place one sign on each end of the blackboard or room indicating “whole grains” and another saying “non-whole grains”. Have the students stand up and place their labels on the “whole grain” or “non-whole grain” sides of the room.
7. When everyone has had a chance to place their label, go through 10-15 examples and determine where it belongs. Highlight potential confusion or misleading labels.
8. If there is extra time, students can do Plant-a-Grain activity as described above.

PART III: LET’S MAKE POWER BARS!

PROCEDURE (ALL)

1. (If you want your class to sample a batch, prepare one batch of garden power bars ahead of time.)
2. Call students up individually to add ingredients to a large mixing bowl. Other students can take turns mixing the ingredients together.
3. When the ingredients are incorporated, place them in a baking dish, cover with waxed paper, and press down firmly to form bars. Place the batch in a freezer to cool and harder slightly.
4. Pull a completed batch from the freezer to cut and serve for the class. Eat and enjoy!



RECIPE: NO-BAKE WHOLE GRAIN ‘POWER BARS’

Ingredients:

- 2 cups puffed brown rice cereal (Unsweetened) or other whole grain cereal
- 2 cups old fashioned oats
- 1/4 cup roasted almonds, chopped
- 1/4 cup roasted sunflower seeds
- 1/2 cup shredded coconut
- 1/2 cup dried fruit, chopped
- 1/2 cup brown rice syrup or 1/2 cup honey
- 1 teaspoon vanilla
- 1/2 cup peanut butter or almond butter (optional)
- 1 cup mini chocolate chips (optional)

Preparation:

1. Combine cereal, oats, nuts, seeds, coconut and fruit in a large mixing bowl.
2. Heat the peanut butter, syrup, and vanilla in a small sauce pan or microwave until warm. Do not boil.
3. Pour the peanut butter mixture over the cereal mixture. Mix while syrup is still warm.
4. Pour mixture into a 9x13 pan. Cover with waxed paper, pack the mixture down firmly with moist fingers or the bottom of another 9x13 pan.
5. Cover with plastic wrap and place in the freezer to cool completely.
6. Cut into enough bars for the class. Serve and enjoy!