**Great Grains**

**Lesson Summary:** In this lesson, students will learn about how wheat and grains are processed and used to make everyday foods. They will also learn what grains are grown locally in Niagara County and they will gain first-hand experience grinding wheat into flour and tasting breads.

**Objectives:** Students will be able to:

- Identify the parts of a grain
- Describe the modern milling process
- Compare and contrast whole grain bread and white bread via taste test
- Identify what grains are grown in Niagara County

**Time Required:**

30 minutes

**Background Information:**

**County Grains Facts:**
Wheat and corn are Niagara Counties’ two major grain crops.
The county is also #1 in popcorn production.
Niagara County ranked 9th in the state in the value of production of grains, oilseeds and dry beans. Individually, the county was 8th in grain corn, 12th in wheat.

**Mortar and Pestles:**
Mortar and pestles have been used for thousands of years. It takes about an hour to grind up enough flour to make a loaf of bread.

**Milling in Niagara:**
The milling industry has a long history in Niagara County. As early as the 1700’s, the Niagara River was used to grind local grains into flour, cereals and animal feeds. Modern grain mills rely on electricity to run, and do not require fast-running water to power the mills.

**Whole Grain Facts:**
Half your grains everyday should be whole grains. Many of our cereals, breads and crackers are made with whole grains. Compare nutrition labels on your foods when you shop. Whole grains are a healthy part of the MyPlate. Whole grains can help prevent diseases, aid in healthy digestion and give you natural sources of vitamins and minerals.
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Materials:
- Mortar and pestle
- Whole wheat berries/kernels
- Various whole grains and flours in clear plastic containers or bags - labeled
- Whole grain wheat bread pre-sliced before class
- White bread pre-sliced before class
- Butter or jam if desired
- Gluten-free bread for anyone with allergies (optional)
- Napkins/paper towels/plates/butter knives
- Wheat stalk or picture of wheat stalk with parts
- Pictures or video of combine, milling, growing - the process of harvesting wheat for white board/slides
- Water for kids to drink (optional)
- Coloring page or comparison chart of wheat/white bread
- Large grain picture with Velcro parts
- Dry erase markers and/or chalk

Procedure:

1. Today we are going to talk about where our bread comes from. Bread is made of flour. Flour is made by grinding grains.
   a. Who can tell me what a grain is? Can anyone name a grain? (Write down answers on blackboard/whiteboard)
   b. Here are some samples of grains. I will pass them around. Please do not open the containers. Discuss each one as you hand it out.
   c. Much of our bread today is made from wheat.
      i. Humans have been farming wheat for thousands of years. Wheat is one of the two major grains that we grow in Niagara County. Can any one name another grain that grows here? (Corn)
      ii. We used to only eat the leaves or grass part of the wheat plant. Now we primarily eat the seeds, or berries, which are typically milled and ground into flour.
   d. Show the parts of the plant as you are talking about the process. Use slides or laminated photos or a short video about wheat processing.
      i. Wheat kernel or berry
      ii. Grass/Leaves
      iii. Stem
      iv. Chaff- (close-up picture so the chaff is easy to see)
2. Let’s talk about the process of making flour.
   a. Modern farmers use a combine to cut down wheat stalks and separate the stem and the chaff from the wheat kernel. The kernels are transported to a mill by trucks or trains. Modern mills utilize a series of large milling machines that can grind wheat and other grains into different products or textures. For example: wheat flour can be coarse and rough- or smooth and soft like white flour.
   b. Can anyone name something that is made from flour? Bread, cereal, crackers, pasta, cookies, cakes, tortillas, pitas, etc.

3. Introduce the Activity:
   a. We are going to grind some wheat kernels into flour ourselves to see how people processed flour before there was modern technology.
   b. One of the earliest tools that humans used to grind grains is called a mortar and pestle. (show and explain)
      i. We are going to take turns grinding down the wheat berries into flour.
      ii. Keep the mortar and pestle(s) at a specific location because they are heavy, and allow students to each go up to the mortar and pestle and grind a little bit. Add new kernels as necessary.
      iii. Show class how grinding is progressing.
   c. Show examples of wheat flour at end- compare to the flour that the students processed.

4. Can anyone tell me about the difference between the flour that we are making and white flour?
   a. White flour comes from the whole grain flour like we just made. If we were to bleach it white and removed the fiber and nutrients from it, we would have white flour. Whole grains and whole wheat breads are better for us because they still contain all of the nutrients that our bodies need.
   b. Describe parts of the whole grain and show picture while talking about the process of making white flour.
   c. Parts of a whole grain:
      i. Starch- main component of a grain
      ii. Bran- outer covering- where fiber comes from
      iii. Germ- seed- a lot of good nutrients are contained here

5. Explain the health benefits of choosing whole grains over white or enriched flour such as vitamins, fiber, minerals, etc. When the bran and the germ are removed, we don’t get those vitamins or minerals.

6. Introduce Taste Test:
   a. Pass out comparison sheet and go over instructions verbally.
b. You will get two samples of breads. One is whole-grain wheat bread and one is white bread. Please fill out the worksheet with your findings. We will discuss once everyone is done.

c. Pass out samples of breads.

d. Talk through the comparison sheet question by question if a younger audience.

7. Wrap up the lesson by talking about the findings and reminding children to choose whole grains over enriched products.

Assessment:

Comparison Sheet

References/Resources:

http://www.wheatfoods.org/resources


http://choosemyplate.gov/