

Bread in a Bag

Objective

Students will read about the origins and history of bread and its nutritional value. Students will follow directions to measure ingredients into plastic zip-top bags and bake their own individual loaves of bread.

Background

Bread, in one form or another, has been one of the principal foods for humans from earliest times. Loaves and rolls made and baked over 5,000 years ago have been found in ancient Egyptian tombs, and wheat has been found in pits where human settlements flourished 8,000 years ago. In the Stone Age, people made solid cakes from stone-crushed barley and wheat. Bread provided ancient people with a reliable food source, which would keep through the winter months and multiply in the summer. This allowed them time to develop other useful skills beyond what was required to feed themselves.

A millstone used for grinding grain has been found that is thought to be 7,500 years old. For thousands of years people used stone wheels powered by wind to grind wheat into flour for bread. In the middle of the nineteenth century, a Swiss engineer invented a new type of mill with rollers made of steel, which operated one above the other and were driven by steam-engines. Meanwhile, the North American prairies were found to be ideally suited to grow wheat. This, together with the invention of the roller-milling system, meant that for the first time in history, whiter flour (and therefore bread) could be produced at a price which brought it within the reach of everyone— not just the rich.

Hard red winter wheat is the kind of wheat used for making bread. Hard red winter wheat is Oklahoma's number one crop and is very important to the Oklahoma economy. In 2016, 136.5 million bushels of wheat were produced, at a value of \$471 million. Oklahoma ranks number five in the nation in the production of winter wheat.

Enriched white bread has about the same nutrients as whole wheat bread. Both are excellent sources of carbohydrates, fiber, protein, B-vitamins and important trace minerals. Whole wheat bread contains 5.3 percent dietary fiber, while white bread has only 1.6 percent. Scientists tell us that an adequate amount of fiber in our diet may help prevent certain types of cancer. Fiber is found in mainly whole grain breads and cereals and in fresh fruits and vegetables. Wheat, oats, barley and other grains are grasses, but no one yet has found the wild form of grass from which wheat, as we know it, was developed. Both whole wheat flour and all-purpose (white) flour are made from kernels of wheat. A wheat kernel is divided into three major parts— bran, endosperm and germ. All-purpose flour is made from only ground endosperm. Whole wheat flour is made by grinding the entire wheat kernel.

Oklahoma Academic Standards

GRADE 1

Speaking and Listening:
R.1,2,3,4; W.1,2. Critical
Reading and Writing: R.4,5;
W.2
Economics: 2

Physical Science—1.1,2
Health—2.4,6; 6.2

GRADE 2

Speaking and Listening:
R.1,2,3,4; W.1,2. Reading and
Writing: R.5,7; W.2
Physical Science: 1-4. Life
Science: 2-1
Health—2.4,6; 6.2

GRADE 3

Speaking and Listening:
R.1,2,3,4; W.1,2. Reading and
Writing: R.7; W.2
Economics: 3
Life Science: 1-1; 4-3,4
Health—2.4,6; 6.2

GRADE 4

Speaking and Listening:
R.1,2,3,4; W.1,2. Reading and
Writing: R.7; W.2
US Regions: 3
Life Science: 1-1
Health—2.4,6; 6.2

Materials

- masking tape
- Felt-tip pen
- White banquet paper for covering tables
- Soapy sponges and water for cleaning
- Kits containing the following for every two students:
 - one 2-gallon heavy-duty plastic bag
 - Three sandwich-size plastic bags
 - Two 1-ounce plastic soufflé cups
 - one 6-ounce plastic cup with lines marked for 1/2 cup and 1/3 cup
 - Two 1-pound size aluminum loaf pans
 - Teaspoon measuring spoons—enough for 20 kits, or 40 students)
 - 20 pounds whole wheat flour
 - 20 pounds all-purpose flour
 - 1 cup active dry yeast
 - 1/2 cup salt
 - 2 cups honey
 - 1 cup salad oil
 - 2-4 pitchers of water

When shopping for 100 percent whole wheat bread, look for a label that has the words “whole wheat.”

English Language Arts

1. Hand out copies of the reading page included with this lesson.
 - Students will read the information about bread.
 - Stop after each paragraph to discuss unfamiliar vocabulary and the main idea of the paragraph.
 - Ask inference questions, such as, “After reading this paragraph, do you think wheat is important to Oklahoma? What clues from the paragraph tell you that?”
 - Students will summarize what they just read, using only one sentence.
2. Hand out copies of the “Inferences, Main Idea and Summarizing” worksheet included with this lesson.
 - Students will complete the worksheet independently.
 - On the back of the booklet write a story about the needs of a plant.

Science

Advance preparations

(Enlist parents or older students to help with this activity.)

1. Gather materials for making the bread. (See list of ingredients at left. many of the ingredients will be available from your school’s food service.) Pre-measure ingredients into kits, and mark the bags 1, 2 or 3 and the cups 1 and 2, as indicated below. For each kit you will need the following:
 - Bag # 1: 1/3 cup all-purpose flour; 2 teaspoons yeast.
 - Bag # 2: 1 1/4 cup whole wheat flour; 1 teaspoon salt.
 - Bag # 3: 1 cup all-purpose flour.
 - Cup # 1: 2 teaspoons honey.
 - Cup # 2: 2 teaspoons honey and 2 teaspoons oil.
 - One 6-ounce plastic cup marked for 1/2 cup and 1/3 cup.
 - One 2-gallon plastic bag.
 - Two aluminum pans marked with students’ names. (Use masking tape and markers.)
2. Clean tables or desk tops with hot, soapy water, then tape white paper down. Each pair of partners will need to face one another.

Class discussion

1. Bring a variety of wheat products to class, and ask students to list the ingredient they have in common that might have grown in Oklahoma.
2. Discuss safe food handling principles, and have students wash their hands thoroughly.
3. Pair students up to make the bread. Have students sit facing one another.
4. Before handing out kits, make sure students understand they must not open any of the bags until instructed to do so. Discuss the importance of following instructions when cooking.

Making the bread

1. Provide one kit for each pair of students. Each bread-making team will make bread as follows:
 - One student roll down the top of the 2-gallon plastic bag to form a bowl and hold it while the other student adds the contents of Bag # 1, Cup # 1 and 1/3 cup of warm water.
 - Unroll the bags, hold them tightly at the base, and use your fingertips (not nails) to mix the ingredients together.
 - Close the bag loosely by rolling down the top as in a log roll.
 - Share some of the background information while you wait for the mixture to rest (about 10 minutes).
 - One student roll the top of the bag back into mixing bowl position and hold it while the other student adds Bag # 2, Cup # 2 and 1/2 cup warm water.
 - Unroll the tops of the bags, squeeze out the air, hold the bag tightly toward the bottom and mix gently from the outside of the bag. Keep mixing until all the ingredients are distributed evenly.
 - One student form the bag into a bowl and hold it while the other student adds about half the contents of Bag # 3.
 - Unroll the top of the bags and mix the ingredients thoroughly until all flour is dispersed.
 - Lightly dust desk with flour and roll the dough out of the bag by rolling the sides down, then turning the bag inside out.
 - Gently work in enough flour to make the dough soft, but not sticky. Caution: Too much flour will make the dough stiff and cause the bread to be tough.
 - When the dough is ready, use the dough scraper to cut it into two equal parts.
 - Kneading the bread by folding it over with your fingertips and pressing with the heel of your hand. Turn, and repeat. Knead dough for 10 minutes. To help keep track of kneading time, prerecord music that lasts approximately 10 minutes and play it while students are kneading. Dough is ready when it has elasticity.
 - Let dough rest by covering for 10 minutes.
 - Share more of the background information, or read aloud one of the books listed in the “Extra Reading” section below.
 - Form loaf into the shape of the pan.
 - Move loaves to a warm place and leave them until they double in bulk.
 - Bake at 350 degrees F in a conventional oven for 25-30 minutes or at 300 degrees F for 18-20 minutes in a convection oven .
 - Eat the bread.

Extra Reading

- Corcoran, Mary K., and Jef Czekaj, *The Quest to Digest*, Charlesbridge, 2006.
- Finch, Mary, and Elisabeth Bell, *Little Red Hen and the Ear of Wheat*, Barefoot, 2001.
- King, Hazel, *Carbohydrates for a Healthy Body*, Heinemann, 2009.
- Lackey, Jennifer D.B., *The Biography of Wheat*, Crabtree, 2007.

Vocabulary

- ancient**—of or relating to a period of time long past
- barley**—a cereal grass with flowers in dense spikes
- bran**—The outer layers of the grain of cereals such as wheat, removed during the process of milling and used as a source of dietary fiber
- economy**—of, or relating to, or based on the production, distribution and consumption of goods and services
- endosperm**—The nutritive portion of a seed **enriched**—improved the value of (food) for nutrition by adding vitamins and minerals in processing
- fiber**—mostly indigestible material in food that stimulates the intestine to move its contents along
- flourish**—to grow well **germ**—the embryo of a seed **mill**—a machine used in grinding raw material
- millstone**—one of a pair of cylindrical stones used in a mill for grinding grain **nutrient**—furnishing nourishment
- prairie**—a large area of level or rolling grassland **reliable**—dependable

Fun With Bread Dough

1. Roll a small amount of dough into a long “snake.”
 - Shapes a large pretzel out of the “snake.”
 - Bake in a small toaster oven in the classroom.
2. Flatten a small piece of dough on parchment paper or foil.
 - Cover with pizza sauce and mozzarella cheese to make individual pizzas.
 - Bake until dough is golden brown and toasted on the bottom.
3. Use dough to shape “ornaments.”
 - Roll small pieces of dough into skinny “snakes.”
 - Braid these together, then close the braid to form a circle or wreath.
 - Bake longer than usual to make the bread more firm.
 - After complete cooling, spray with clear spray paint or let students paint them.

Landau, Elaine, *Wheat*, Scholastic, 2000.

Levenson, George, *Bread Comes to Life*, Tricycle, 2008.

Macaulay, David, *The Way We Work*, Houghton Mifflin, 2008.

Mayo, Gretchen Will, and Susan Nations, *Cereal*, Weekly Reader, 2004.

Pinckney, Jerry, *The Little Red Hen*, Dial, 2006.

Reed, Janet, *Everyone Eats Bread*, Red Bricklearning, 2003.

Royston, Angela, *Water and Fiber for a Healthy Body*, Heinemann, 2009.

Taus-Bolstad, Stacy, *From Wheat to Bread*, Lerner, 2002.

Snyder, Inez, *Wheat*, Children’s, 2004.

Yolen, Jane, and Greg Shed, *Harvest Home*, Harcourt, 2002.

Bread

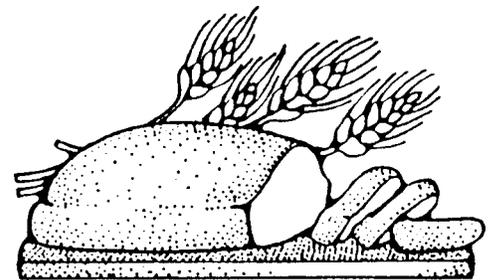
Bread has been an important food for humans from earliest times. During the Stone Age, people made solid cakes from stone-crushed barley and wheat. For thousands of years people used stone wheels powered by wind to grind wheat into flour for bread. Hundreds of years ago a Swiss engineer invented a new type of mill, with rollers made of steel. The rollers operated one above the other and were driven by steam-engines.

At about the same time, settlers on the North American frontier found that the prairies were a perfect place to grow wheat. This discovery, together with the invention of the roller-milling system, meant that whiter flour could be produced at a lower price. Whiter flour makes better bread. For the first time in history, everyone could afford bread—not just the rich.

Hard red winter wheat is the kind of wheat used for making bread. Hard red winter wheat is Oklahoma's number one crop and is very important to the Oklahoma economy. In 2016, 136.5 million bushels of wheat were produced at a value of \$471 million. Oklahoma ranks number five in the nation in the production of winter wheat.

Enriched white bread has about the same nutrients as whole wheat bread. Both are excellent sources of carbohydrates, fiber, protein, B-vitamins and important minerals. Whole wheat bread contains more fiber than white bread. Scientists tell us that an adequate amount of fiber in our diets may help prevent certain types of cancer. Fiber is found in mainly whole grain breads and cereals and in fresh fruits and vegetables.

Both whole wheat flour and all-purpose (white) flour are made from kernels of wheat. A wheat kernel is divided into three major parts—bran, endosperm and germ. All-purpose flour is made from only ground endosperm. Whole wheat flour is made by grinding the entire wheat kernel. When shopping for 100 percent whole wheat bread, look for a label that has the words “whole wheat.”



Name _____

Bread: Inference, Main Idea, Summary

Read the Reading Page about Bread and answer the following questions.

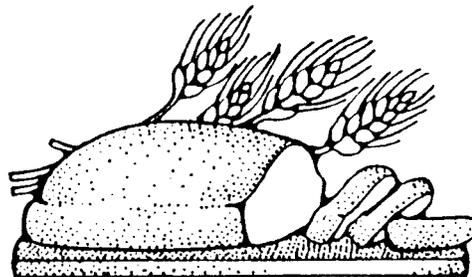
1. From this article, you could guess that:
 - a. Few people in Oklahoma grow wheat.
 - b. Many people in Oklahoma grow wheat.
 - c. Wheat is not an important crop in Oklahoma.

2. After reading this article you can tell that:
 - a. All purpose flour is made from one part of the wheat kernel.
 - b. All purpose flour is made from the entire wheat kernel.
 - c. All purpose flour is not made from wheat.

3. What is the main idea of this article?
 - a. Wheat is the number one crop in Oklahoma.
 - b. White bread has the same nutrients as whole wheat bread.
 - c. Bread is an important nutritious food and is made from wheat that has been ground into flour.

4. Look back at paragraph 3. Summarize the paragraph in one sentence:

5. What is paragraph 5 mostly about?
 - a. Whole wheat flour is made by grinding the entire wheat kernel.
 - b. All purpose flour is made by grinding only the endosperm
 - c. Both whole wheat flour and all purpose flour are made from kernels of wheat.



Name _____

Bread: Inference, Main Idea, Summary (answers)

Read the Reading Page about Bread and answer the following questions.

1. From this article, you could guess that:
 - a. Few people in Oklahoma grow wheat.
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2. After reading this article you can tell that:
 - a. All purpose flour is made from one part of the wheat kernel.
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3. What is the main idea of this article?
 - a. Wheat is the number one crop in Oklahoma.
 - b. White bread has the same nutrients as whole wheat bread.
 - c. Bread is an important nutritious food and is made from wheat that has been ground into flour.

4. Look back at paragraph 3. Summarize the paragraph in one sentence:
Wheat is an important crop in Oklahoma and is important to Oklahoma's economy.

5. What is paragraph 5 mostly about?
 - a. Whole wheat flour is made by grinding the entire wheat kernel.
 - b. All purpose flour is made by grinding only the endosperm
 - c. Both whole wheat flour and all purpose flour are made from kernels of wheat.

