

BREAD STUDY GUIDE

Level: Elementary and Junior and Senior Secondary School

Subject Areas: Social Studies, World Cultures, Home Economics, Nutrition, Health, Food Sciences

Themes:

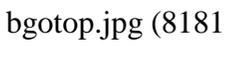
- * The universality of bread baking throughout the world
- * The variety of flavours, shapes and textures of bread that are produced by varying the common, basic steps of bread making.

Content: The film tells the story of bread baking entirely through images and real sounds. No explanation is needed. The steps of bread making are repeated visually several times, by bakers of different nationalities, before the film moves on to show the next step. Thus, the mixings of basic ingredients, kneading of the dough, rising, shaping, baking and serving of the bread are shown over and over, each time revealing a new method or different tradition. The sounds and images are recorded in carefully chosen, contrasting locations: home kitchens, small bakeries, a restaurant a huge factory and even the inside of an enormous brick oven.

"Bread" includes North American, Western European, Eastern European, Middle Eastern, Indian and Caribbean bread making. It was filmed entirely in Montreal, a city in which a great number of cultural traditions flourish.

Aims of the film:

- * To show the universality of bread and bread baking
- * To provide a very close look at types of bread baking which the audience may never have a chance to see
- * To celebrate the sensory beauty of bread and bread making
- * To introduce the audience to new kinds of bread and ways of serving bread
- * To show different cultural traditions with a common theme

Some of the breads in the film: 

- * Bagel (Jewish): Ring shaped, dense textured rolls sprinkled with sesame or poppy seeds
- * Baguette (French): Long loaves of crusty bread
- * Crumpets (English): Round, flat, spongy muffins
- * Croissants (French): Flaky, crescent shaped rolls layered with butter
- * Coconut (Caribbean): Cake like loaf with coconut and bananas
- * Challah (Jewish): Braided egg bread decorated with poppy seeds
- * Nan (Indian): Leaf shaped bread baked on the wall of a clay oven
- * Orange Bread (Greek): Ring shaped loaf decorated with coloured eggs

- * Pain en épie (French): Long loaves of crusty bread cut by scissors into a leaf like pattern
- * Pita (Middle Eastern): Round, flat pockets of bread
- * Rye (Middle European): Dark loaves made with wheat and rye flour and decorated with caraway seeds
- * Tannur (Middle Eastern): Large sheets of extremely thin bread

The Basic Ingredients

Wheat is a highly nutritional grain that is relatively easy to store for long periods of time. The wheat shaft is comprised of many wheat kernels. The wheat kernel consists of three parts: the germ, the endosperm and the bran. The germ is the seed of the wheat kernel; the bran is the covering; the endosperm is the fuel and main source of carbohydrate. The main nutrients in these three parts of the kernel are:

- * Thiamin (Vitamin B – 1) ... good for energy, stamina and metabolism of food
- * Niacin (A B – Vitamin) ... good for metabolism of food
- * Riboflavin (Vitamin B – 2) ... good for growth and healing
- * Pyrodoxine (Vitamin B – 6) ... good for protein metabolism, red blood cells and nervous system
- * Iron good for blood cells and transport of oxygen in the body
- * Calcium, Phosphorus good for bones and teeth
- * Sodium, Potassium Help maintain proper fluid balance in the body
- * Vitamin E (Present in the wheat germ)... protects polyunsaturated fats in body cells

Wheat flour is made pounding or grinding wheat kernels to a powder like consistency. When the germ and bran are left in the flour with the endosperm, whole wheat flour is the product. Since the bran is high in fiber content, and the germ contains vitamin E, whole wheat flour is somewhat more beneficial to eat than white flour. In white flour, the bran and germ are sifted out of the flour. In both white and whole wheat flour, the main bulk consists of the endosperm, which is mostly carbohydrate, rich in the vitamins and minerals listed above and rich in gluten, a protein substance.

Yeast is a fungus that floats freely in the air. Like wheat, yeast is rich in B vitamins. The function of yeast in bread-making is its ability, in conjunction with gluten, to make the bread rise. Bread that rises is called leavened bread, and the discovery of yeast as a leavening agent was most likely an accident. Ancient Egyptians used to make bread by mixing flour and water together and baking it. It is assumed by historians that while the flour and water mixture was left in the sun, yeast from the air got into the dough accidentally and made the bread arise. Since leavened bread is tasty and light, the effect of free floating yeast cells became desirable. The Romans were the first to devise a way to breed and store yeast for bread-making.

How does yeast make the bread rise? Under the right circumstances, living yeast fungus cells multiply very rapidly. Yeast needs moderate warmth, a damp environment and carbohydrates to feed on in order to multiply. These are exactly the properties of bread dough

when left in a warm space. As the yeast multiplies, it lets off carbon dioxide (CO₂) gas. The carbon dioxide gas, trapped in the bread dough is what makes the bread puffy and light.

The interaction of ingredients: The steps in bread-making

The unique magic of bread-making is due to the interaction of the three main ingredients: wheat, yeast and water. The special interaction of these ingredients is set off and controlled by the established steps of bread-making.

Mixing the dough
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When the flour, yeast and water are initially mixed together, the result is a kind of lumpy paste. The ingredients must be stirred to smooth out the dough and to ensure the ingredients are evenly mixed. The water used must be lukewarm in order to activate the yeast cells that will immediately begin to grow in the warm, wet, starchy environment of the dough.

Kneading

Kneading the dough is essential in order to break down the gluten in the flour. Gluten has a unique property: the ability to stretch. As the gluten breaks down, the dough becomes stretchy. The particles of flour, water and yeast stick firmly to each other, and the dough can be pulled without easily breaking apart. Without this stretchy, elastic quality, the dough would not be able to rise. It would just break apart when CO₂ gas was formed, and the gas escapes from the surface of the dough. However, because of the stretchy gluten, the gas from the multiplying yeast cells cannot escape and the dough stretches and rises. If the dough is not kneaded sufficiently, the gluten will not form strong enough bonds to hold in the gas, and, also, the dough may arise unevenly. Bread dough has been adequately kneaded when it is smooth, elastic and slightly shiny. Then, it is time to stop kneading! Over-kneaded dough can become tough.

Rising

The dough must now be left to rise in a warm, quiet place. Dough rises fairly rapidly when kept at 70 to 80 degrees Fahrenheit (21 to 26 Centigrade). At higher temperatures, the yeast cells can die, and the bread will not rise at all. At lower temperatures, for example, in the refrigerator, the dough will rise but at a very slow rate, too slow for commercial bakeries.

Shaping

After the dough has doubled in bulk, it is punched to let out the gas. The gas must be expelled in order to shape the dough neatly into loaves or rolls. After shaping the dough, it is left to rise again.

The second rise

The second time the bread is left to rise, is often a shorter period of time than the initial rise because it tends to rise somewhat faster the second time. This time, after the dough has

doubled in bulk, it is not punched down to let out the gas. The gas is retained to keep the bread light.

Baking

The dough is now ready to be placed into a pre-heated oven. Once in the oven, the bread will continue to rise very rapidly for a while. It continues to rise because the yeast keeps multiplying and the carbon dioxide gas expands in the heat of the oven. When all the yeast cells die as the temperature of the oven cooks the dough and when a crust starts to form on the outside of the bread, the rising stops.

Additional Steps and Ingredients

Sourdough

Some bakers do not always use packaged yeast to make bread dough. Instead, after making an initial batch of dough with dry yeast, they save a portion of that batch of dough and add it to the next batch. There is enough yeast in the saved portion of dough to inoculate the next batch. This process can go on and on consecutively, batch after batch for weeks, months or years.

The portion of each batch of dough that is retained to add to the next batch is called sourdough. One of the results of this process is that over the years, the sourdough from one bakery will pick up a distinctive and characteristic flavour from the atmosphere of the bakery itself. In the film "Bread" the dark loaves of rye and pumpernickel are made from sourdough.

Flavouring

Many breads have more ingredients than wheat flour, yeast and water. Rye bread and soy bread are made by adding rye or soy flour to the wheat flour. However, wheat flour is always necessary in leavened yeast breads because of its high gluten content.

Other common ingredients in bread dough are milk, eggs, sugar, salt, butter and oil. You can see some of these ingredients added to the dough in bread. You can also see breads with coconut and orange juice added to the dough.

Sponge dough
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For breads that are particularly rich and fine textured, the first mixture of ingredients includes only a portion of the total amount of flour that will be added to the dough. This first, light mixture rises very high. After the first rise, more flour may be added.

In the film you can see a large vat of sponge dough rising with the help of time lapse (extremely sped up) photography. In reality, it took almost four hours for the sponge to rise. In the film, the rise is compressed into approximately 10 seconds.

Special baking procedures

For a very crisp crust, moisture is sometimes needed in the oven. Either a pan of water is placed in the oven or the loaves are brushed or sprayed with water during baking.

For added flavour, some bakers put wood in the oven that lets off fragrant smoke. In the film "Bread" the bagels are baked with fragrant hickory wood in the oven.

Many bakers move the loaves around the oven while they are baking in order to ensure that the bread bakes evenly. In the film you can see loaves of French bread rotating on a special motor driven rack. You can also see loaves of pita bread being moved around the oven by hand on a large wooden paddle and crumpets moving through the oven on a large assembly line.

Suggested activities and discussion topics

Activities

If your school is equipped with a kitchen or a home economics department, you can make bread with your students. A simple recipe for bread is included at the end of the Study Guide. It takes 3 to 4 hours to make bread from start to finish.

Ask your local baker if you can visit the bakery, or call a large commercial bread manufacturing company for a tour of mills that are also interesting to visit. If you are lucky enough to live near a rural district where you might find an old stone grinding flour mill, a trip to one is especially rewarding. Some of the old stone grinding mills still have water wheels. To find a stone mill, consult with the nearest historical society or phone your local health food store that may sell products made with stone ground flour. They can provide you with an address.

Discussion topics

What are some of your favourite kinds of bread? Did you see them in the film? What kinds of bread did you see in the film that are new to you? Can you identify the national origin of some of the breads in the film?

How does leaved bread rise? How do the yeast and gluten work together?

Why is bread good for you? Why is wheat such an important crop? If people all over the world make bread, do you think that wheat must be a world wide crop? Why is wheat trading so important between nations?

What kinds of bread do you eat on special occasions? Are there any ceremonies you know of that concern bread?

How many kinds of bread do you eat almost every day? Where do you buy bread? Do you ever make it at home and if so, how do you make it?

A Simple Recipe for Bread (2 loaves):

- * Utensils
- * 1 small bowl
- * 2 fairly large mixing bowls
- * Measuring cup
- * Measuring spoons
- * Wooden spoon
- * 2 Standard size bread pans
- * A damp, clean tea towel or plastic wrap
- * A small metal rack
- * Razor blade or sharp knife
- * Ingredients
- * A pinch of sugar
- * 6 to 7 cups flour 1 package active dry yeast
- * 1½ teaspoons of salt
- * 2 cups lukewarm water

Procedure

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Start the yeast: Put the lukewarm water and the yeast into the small bowl with the pinch of sugar. Stir, then let it sit for a few minutes until the yeast starts to bubble. The sugar will help the yeast start to grow. **Measure the dry ingredients:** In the meantime, sift 6 cups of flour into one of the mixing bowls and add the salt.

Mixing: When the yeast has started to bubble, add it to the flour and salt mixture. Stir thoroughly. The dough should be slightly sticky. If it is too stiff, add a little more lukewarm water. If the dough is exceedingly sticky, add a little more flour. When the ingredients are combined well, scrape the dough out of the bowl onto a lightly floured surface.

Kneading: Lightly flour your hands and begin kneading the dough by pushing it down, folding it in half, turning it slightly and pushing down again. Repeat the pushing, folding and turning for 10 minutes. You may need to lift the dough in order to turn it, and you may also need to lightly flour the kneading surface and your hands from time to time to prevent the dough from sticking. Add more flour sparingly if it is necessary to do so. After kneading, the dough should be smooth, elastic and slightly shiny.

The first rise: Lightly oil the second mixing bowl. Form the kneaded dough into a ball and put it in the oiled bowl. Lightly oil the surface of the dough on the top. You can do this by simply rolling the dough around in the oiled bowl. Cover the bowl with a damp cloth or with plastic wrap and place it in a warm, draft free place (like the inside of a turned off oven). Let it rise until it has doubled in bulk. Depending on the temperature of the room, this can take on to two hours.

Shaping: Oil the two bread-pans lightly. Punch the risen dough once with your fist to deflate it. Turn it out onto your working surface and knead it several times, for about 10 seconds. Cut the dough in half and let it rest for about 10 minutes. Now place each piece of dough into one of the bread pans, smoothing and evening out the dough before replacing it into the pan. Let the bread rise in the pan until it doubles in bulk again, approximately 45 to 60 minutes.

Pre-heat the oven to 450o F.

When the dough has doubled, slash it down the center to a depth of about ½ Inch with a razor blade or very sharp knife. Place the bread in the oven for 30 to 40 minutes, or until the bread sounds hollow when you rap it with your fingers. If the oven does not heat evenly, turn the pans once or twice after fifteen minutes of baking.

When the bread is done, turn it out onto the metal rack and let it cool for at least 20 minutes before serving it. If you serve the bread too soon, it will collapse and become doughy.

Further Reading

Clayton, Bernard Jr., *The Complete Book of Breads*, Simon and Schuster, 1973.

Kaufman, Ted and Jean, *The Complete Bread Cookbook*, Warner Books, 1969.

Robertson, Laurel, Flinders, Carol and Godfrey, Bronwen, *Laurel's Kitchen*, Nilgiri Press, 1976.

Time Life Books, *The editors of, Breads*, Time Life Books, 1981

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