

# Bread in a Bag & Butter in a Jar

## Teacher Guide

**Grade:** Five

**Subject:** Science

**Unit:** Properties of and Changes in Substances

### SLO

5-2-14 - Research and describe how raw materials are transformed into useful products.

Examples: food processing, oil refining, paper milling, plastic moulding, gold smelting

### Materials

Copies of the CWB brochure 'From Wheat to Bread'. (master copy included below)

### Method

The jigsaw method would work well with this lesson on how wheat grain is transformed into bread.

- First divide your students into groups of four. These will be the home groups.
- Make enough photocopies of the enclosed CWB brochure 'From Wheat to Bread' so that you have one per group.
- Cut each brochure into four parts.

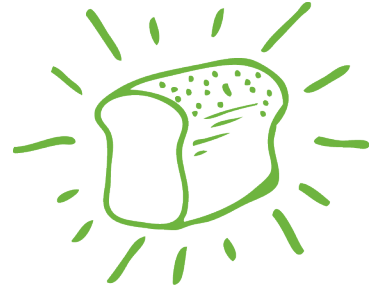
Part One – The opening paragraph under Flour Milling plus the Wheat Kernel Cross-section, Wheat Kernel including Endosperm, Bran and Germ

Part Two – Wheat Intake, Cleaning & Tempering, The Milling Process, Flours, Flour Treatment and By-Products

Part Three – The opening paragraph under Bread Baking plus Four Basic Bread Types including Pan Breads, Hearth, Breads, Flat Breads and Steamed Breads

Part Four – Methods & Ingredients, Mixing, Fermentation, Make-up, Final Proof and Baking

- Number the students in each home group from one to four. Rearrange students into 'expert groups' by putting all of the number one students in expert group one, number two students in expert group two and so on.
- Each expert group learns the part of the brochure that corresponds to their number and decides how best to teach the information to their home group.
- Then the students return to their home groups and each in turn teach the others what they have learned.



## Assessment

You can assess students individually by using any of the following:

- The quiz found below.
- Have each student create a poster or flow chart showing how grain becomes bread.
- Have each student write from the perspective of being a wheat grain going on a journey to become bread. They should include a description of themselves, their journey through the flour mill and then the bakery. They can also describe what kind of bread they became and who ate them.

## Complimentary Activity

AITC Bread in a Bag & Butter in a Jar enclosed. This activity lends itself to demonstrating the following SLO's:

5-2-03	Investigate to determine how characteristics and properties of substances may change when they interact with one other. Examples: baking soda in vinegar produces a gas; adding flour to water produces a sticky paste
5-2-09	Explore to identify reversible and non-reversible changes that can be made to substances. Examples: reversible - folding paper, mixing baking soda and marbles; non-reversible - cutting paper, mixing baking soda and vinegar
5-2-10	Recognize that a physical change alters the characteristics of a substance without producing a new substance, and that a chemical change produces a new substance with distinct characteristics and properties.
5-2-11	Observe examples of changes in substances, classify them as physical or chemical changes, and justify the designation. Examples: physical - bending a nail, chopping wood, chewing food; chemical - rusting of a nail, burning wood, cooking food.

## Supplementary Materials

- How it's Made – Bread with host Mark Tewksbury, 6:22 video, <http://www.youtube.com/watch?v=3UjUWfwWAC4>
- If you would prefer to have some or all of your students research how pasta is made you will find the CWB 'From Durum to Pasta' brochure included
- How it's Made – Pasta with host Mark Tewksbury, 5:30 video, <http://www.youtube.com/watch?v=iicXudv4imc>



## How it's Made: From Wheat to Bread

1. Name the Canadian wheat that is considered the best for bread production.

\_\_\_\_\_

2. The wheat kernel is a storehouse of nutrients. It is made of three parts:

- A. Endosperm
- B. Bran
- C. Germ

Match the correct part to each of the statements below:

- \_\_\_ i. Is the sprouting part of the seed
- \_\_\_ ii. Makes up to 83 per cent of the wheat kernel
- \_\_\_ iii. Is sold as a nutritional supplement for humans and animals
- \_\_\_ iv. Is added in the milling process to make whole wheat flour
- \_\_\_ v. Is used to make white flour
- \_\_\_ vi. Is used in animal and poultry feed
- \_\_\_ vii. Is composed of starch and protein



3. The flour milling process changes wheat into flour. It involves five steps. Describe what is happening at each step.

a) Wheat Intake - \_\_\_\_\_

\_\_\_\_\_

b) Cleaning and Tempering - \_\_\_\_\_

\_\_\_\_\_

c) Milling - \_\_\_\_\_

\_\_\_\_\_

d) Flours - \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

e) Flour Treatment - \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

4. In agriculture, very little is wasted. What is done with the germ, bran, and endosperm left over after the flour has been milled?  
\_\_\_\_\_  
\_\_\_\_\_

5. Wheat flour is unique because when you add water to the protein in the flour, gluten forms. What does gluten do to the bread dough?  
\_\_\_\_\_  
\_\_\_\_\_

6. Name the flour basic bread types.  
\_\_\_\_\_  
\_\_\_\_\_

7. Which type of bread is common in the Middle East and India?  
\_\_\_\_\_

8. Order these steps in the baking process. Put number 1 by the first step, number 2 by the second step, and continue until you have numbered all of the steps in their correct order.

- \_\_\_\_\_ a) Yeast feed on sugars and produce carbon dioxide which expands the volume of the dough.
- \_\_\_\_\_ b) The bulk dough is divided into pieces of the correct weight.
- \_\_\_\_\_ c) Flour, water, yeast and other ingredients are mixed to form dough.
- \_\_\_\_\_ d) The dough is placed in a fermentation cabinet to increase volume.
- \_\_\_\_\_ e) The dough is baked in an oven and transformed into bread.

