Yeast Power!

Purpose

Students will experiment with yeast in order to recognize that most microorganisms do not cause disease and many are beneficial.

Materials

For the teacher: 1.25 ml spoon, 15-20 ml of yeast, 10-12 plastic zipper bags, chalk, chalkboard
For each pair of students: 2 copies of Black Line Master (BLM) *Yeast Power!*, 2 large clear cups, ruler, marker, spoon, 1/2 banana, plastic knife, empty plastic zipper bag
For the class: flour, sugar, metric measuring cups, metric measuring spoons, warm water

Activity

A. Pre-Activity Preparation

1. Place the *Yeast Power!* materials in a spot accessible to the class.
2. For each pair of students, measure 1.25 ml of yeast into a plastic zipper bag.

B. Pre-Activity Discussion

1. Ask students if they can name some microorganisms. Write the microorganisms on the board, adding to the list if necessary.
2. Write the following list of words on the board: bread, cheese, yogurt, penicillin, digestion, and decomposition. Ask students: "How do any of these items or services relate to microorganisms?"
3. Explain that most microorganisms are beneficial, not harmful. Discuss how they provide services or help us make many of the things we eat or use to stay healthy.
4. Have students brainstorm specific ways that microorganisms are related to the list of words on the board. [For example, bacteria and fungi help recycle many things through decomposition.]

C. Experimenting with Yeast

1. Tell students they will investigate how yeast helps make bread.
2. Hand out the BLM *Yeast Power!* and go over the directions with students.
3. Have pairs of students collect the necessary materials and follow the instructions on the BLM *Yeast Power!*
4. Provide students with ample time to complete their observations.

(continued)

EXTENDING THE ACTIVITY

Have students bake their yeast bread and eat it with some cheese, yogurt, or sour cream (be sure to check for student allergies). Discuss how all of these products were produced in part by microorganisms.

MEETING INDIVIDUAL NEEDS

Have students who need a challenge graph the height of their bread over the course of the experiment and share their graphs with the class.

Standards Links
5.2.7, 5.4.2, 5.5.1

Activity (continued)

D. Yeast Decomposition

1. While students wait for their bread to rise, hand out one empty plastic zipper bag, one plastic zipper bag containing 1.25 ml of yeast, ½ of a banana, and a plastic knife to each pair of students.
2. Have students label each bag with their names. Tell students to label the bag containing yeast "Yeast" and the other "No Yeast."
3. Have students cut four thin slices of banana and place two slices in each of the plastic bags.
4. Have students seal both plastic bags and place them in a warm, dark spot in the room overnight.
5. Guide students to brainstorm and share what they predict the bananas will look like the next day.

E. Class Discussion

1. After two hours have passed and students have completed their yeast bread observations, gather the students as a class.
2. Ask students to describe what occurred when the yeast was left out of the bread mix and what occurred when the yeast was included in the bread mix.
3. Ask students: "What other products would we be without if we did not have the help of microorganisms?"
4. Ask students if they can give other examples of services microorganisms provide.

F. Disappearing Banana Observations

1. The next day in class have students observe their two bags of banana and complete the BLM.
2. Ask students questions such as: "What did the yeast do to the banana? What happened to the banana that was sprinkled with yeast?"
3. Explain that the yeast decomposed the banana very quickly. In nature, fungi are responsible for decomposing many things. Without them, dead organisms might cover Earth.

Questions for Review

Basic Concepts and Processes

At the conclusion of the activity, discuss the following with the students:

📖 Do all microorganisms cause disease?

💡 How do you know?

📖 Describe some things that microorganisms allow us to make and some services they provide.

Name: _____

Yeast Power!

1. Label one cup: "No Yeast."
2. Add 120 ml flour and 10 ml of sugar to the "No Yeast" cup and stir them together.
3. Label the second cup: "With Yeast."
4. Add 120 ml flour, 10 ml of sugar, and 2.5 ml of yeast to the "With Yeast" cup and stir them together.
5. To each cup, add warm water, 5 ml at a time, and stir the mixture until it looks and feels like play clay.
6. Mark the level of the dough on each cup with the marker.
7. Use a ruler to measure the height in centimeters from the bottoms of each cup to the marks. Record those measurements on the table as the initial heights.
8. Every 30 minutes, measure and record the height of the dough in each cup.

Rising Bread Observations

	Height Without Yeast (cm)	Height With Yeast (cm)

What difference did the yeast make? _____

_____

Disappearing Banana Observations

(Answer these questions after leaving sealed bags of bananas in a warm spot overnight.)

Describe the banana without yeast. _____

_____

Describe the banana with yeast. _____

_____