My World and Me™

RESOURCES AND THE ENVIRONMENT

Make a Processed Food

Written by Barbara Tharp, M.S., Nancy Moreno, Ph.D., and Paula Cutler, B.A.

from *Resources and the Environment Teacher's Guide* and for *Tillena Lou's Big Adventure*.

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This activity is part of the Resources and the Environment teaching unit. The *teacher's guide* may be used alone or with integrated unit components. The Resources unit is comprised of the guide, *Tillena Lou's Big Adventure* (storybook), and two supplements: *The Reading Link* and *The Math Link*. For more information on this and other educational programs, contact the Center for Educational Outreach at 713-798-8200, 800-798-8244, or visit http://www.bioedonline.org./

Printed in the United States of America.

ISBN: 978-1-888997-67-5

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Teacher Resources from the Center for Educational Outreach at Baylor College of Medicine.

Development of My World and Me® educational materials was supported, in part, by the National Institutes of Health, National Center for Research Resources, grant number RR25 RR13454, and National Institute of Environmental Health Sciences, grant number R25 ES10698. The opinions, findings and conclusions expressed in this publication are solely those of the authors and do not necessarily reflect the views of Baylor College of Medicine or the funding agencies.

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ACKNOWLEDGMENTS

The My World and Me Project at Baylor College of Medicine has benefited from the vision and knowledge of scientists and educators from a wide range of specialties. Our heartfelt appreciation goes to William A. Thomson, PhD, Professor of Allied Health Sciences, and Family and Community Medicine and Director, Center for Educational Outreach, who has lent his support and expertise to the project.

Special acknowledgment is due to our affiliate in this project, the American Physiological Society (APS). We especially thank Marsha Lakes Matyas, PhD, and Katie Frampton of APS, for their invaluable reviews of draft materials and direction of field tests, focus groups, and dissemination activities in the Washington, DC area.

Special thanks go to the National Center for Research Resources of the National Institutes of Health (NIH) for its support of the My World and Me project, and to the National Institute of Environmental Health Sciences, NIH, for its support of classroom implementation of My World and Me materials in the Houston area.

We are grateful to the many classroom teachers in Washington, DC, and Houston, Texas, who participated in the field tests of these materials and provided invaluable feedback. We especially thank Rachel J. Cunningham, Wanda J. de Vries and Nannette M. Schultz at Whidby Elementary School in Houston for their contributions and suggestions.

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Make a Processed Food

Each student prepares a processed food (frozen banana pop) and eats the product.

The United States Department of Agriculture (USDA) recommends eating 4–5 servings of fruits and vegetables per day as part of a balanced diet. People eat fruit and vegetables in both natural (unprocessed) and processed states. Depending on the desired outcome, getting a fruit to a processed form may take a sequence of steps. These steps may include steaming, freezing, boiling, baking or drying. Also, additional ingredients can be added to the fruit to create a processed food.

Many nutritious foods have been processed to make them safer or more convenient. In fact, people have processed fresh foods for thousands of years. Some methods of processing, such as cooking, may make food tastier, easier to eat or more digestible. Other forms of processing, such as salting, canning, smoking, freezing and drying, help to prevent food from spoiling for long periods of time. Many modern processed foods have been created to save time and facilitate meal preparation.

Many foods in the market are designated as "organic." In general, organic foods are produced without the aid of chemical fertilizers and pesticides. Organic meats and poultry are raised without antibiotics and other chemical additives, and receive food grown without chemical fertilizers, pesticides or genetically modified seeds. As with other foods, many organic foods are cooked or processed in other ways. The USDA has produced standards for organic production.

SAFETY ISSUES

Some children may have special food allergies. You may wish to check with the school nurse or send a letter home to parents asking for this kind of information prior to conducting the activity.

Follow all district and school science laboratory safety procedures. Disinfect work areas prior to and after this activity. Have students wash their hands with soap and water before and after handling food items. For sanitary reasons, make sure students keep their peeled bananas on the disposable plates.

SETUP

Chocolate shell desert coating is a liquid chocolate that quickly hardens when applied to a cold surface, such as when drizzled on a scoop of ice cream. For the activity, the bottles of chocolate shell need to be at room temperature.

You will need access to a freezer in which to place the student-prepared bananas. The bananas will need to freeze for at least 12 hours. Use an insulated cooler to move the frozen bananas from the freezer to the classroom.

CONCEPTS

- Food is one of the four basic needs of consumers, such as animals.
- Humans eat a variety of foods, some natural and some processed.
- Only humans cook and process foods (with a few exceptions).
- A processed food is altered in some way from its state when picked, harvested or prepared for market.
- Materials can exist in different states (solid, liquid, gas, plasma).

SKILLS

- Observing
- Generalizing
- Comparing and contrasting
- Following directions
- Sequencing

TIME

Setup: 10 minutes each day
Class: 20 minutes on Day 1, 30 minutes on Day 2

MATERIALS (see Setup)

See page 2 for complete list.

MATERIALS

Teacher Materials

- 12 medium- to large-sized resealable plastic bags (for card sets)
- 4 bottles of Chocolate Shell® or Hershey's Shell® liquid chocolate
- Access to a freezer
- Banana
- Craft stick
- Disposable plate, 8 in.
- Insulated cooler, large
- Resealable plastic bag, quart size
- Plastic knife

Materials per Student Team

- 4 disposable plates, 8 in.
- 2 craft sticks
- 2 resealable plastic bags, quart size
- Banana (unpeeled)
- Crayons
- Glue or tape
- Plastic knife
- Prepared set of "Make a Banana Pop" cards in a plastic bag

Optional: Copies of "My Science Journal" sheet

Make 12 photocopies of both student sheets. Before cutting out the cards on the pages, separate the pages into 12 sets. Cut out the cards in each set. Place each set of cards in a medium- to large-sized resealable plastic bag, then mix up the cards inside each bag.

Depending on the age of the students, you may wish to write each student's name on his or her craft stick.

Day 1: Prepare a demonstration set using a whole banana, and material sets for each student team. Student pairs should work together to prepare the bananas.

Day 2: Prepare materials for each student team. Have students work individually to finish preparing his or her banana pop.

Optional: Large strawberries may be substituted for the bananas. See "Safety Issues."

PROCEDURE

Day 1

1. Before students begin handling food, make a point of demonstrating how to wash hands with soap and water. Have students wash their hands before proceeding with the activity.

   Tip: Tell students to sing the "Happy Birthday" song completely to gauge how long to wash their hands—about 10 seconds.
2. Gather students in a semicircle and review the differences between natural and processed foods. Explain that today, each student will be given a natural food and will follow steps to process it. Show a whole banana to the group and ask, *What is this?* [banana] *To which food group does it belong?* [fruits] *Do we eat it like this?* [We have to peel it.] *Why? Why does it have a peel?* (The peel is inedible, but it protects the delicate edible part inside.) Demonstrate how to cut a banana in half with a plastic knife and note that each student team will receive a banana, which they will cut in half.
3. Peel a banana, cautioning students to keep their peeled bananas on their disposable plates for sanitary reasons.
4. Show students the craft stick and instruct them to use their crayon to write their names on one end of their sticks (or have names already on sticks). Follow by showing students how to push the unlabeled end of the stick into the center of the cut end of the banana. Instruct them to push the stick as far as possible, but to leave the name end visible.
5. Demonstrate how to place the banana in the plastic bag, leaving the name end of the stick visible. Explain that you will put the prepared bananas in the freezer overnight, and that in tomorrow's class, students will continue the steps for processing their bananas into chocolate banana pops.
6. Divide students into teams of two. Give a set of "Make a Banana Pop"

sequence cards to each team and ask the students to arrange the cards in the correct sequence. Then discuss the proper sequence and encourage students to correct any mistakes they made. Have students glue the cards on a sequence strip, which will serve as a reference when they make their banana pops.

7. Have one student from each pair collect his/her team's supplies from the supply table.
8. After students have prepared their bananas, ask them to place their bananas in the cooler. Transport the frozen bananas to and from the classroom in an insulated cooler.
9. Put the bananas in a freezer until the next class period (at least overnight).
10. Instruct everyone to clean up his/her work area.

Day 2

1. Before students begin handling food, have them wash their hands with soap and water for at least 10 seconds.
2. Distribute each team's "Make a Banana Pop" sequence strip that students made in the previous class session. Have students review before they complete the steps in making their banana pops.
3. Give each student the banana pop he or she prepared the day before. Explain that each student should carefully remove his or her banana from its plastic baggie and place it on a paper plate.
4. Distribute the bananas, reading students' names from the sticks. After students have unwrapped their bananas, ask, *Has your banana changed?* Discuss. Then, pour a small pool of chocolate shell onto each student's plate. Have students to roll their frozen bananas in the chocolate to coat bananas fully. Have students wait a few minutes and watch the change in the chocolate coating as it solidifies on the bananas. Then, it's time to eat! Be aware of any food allergies children may have before inviting students to eat their bananas.
5. Have students join you in a circle. Ask, *What differences do you notice in your banana today? Did freezing the banana change it?* After the students respond, point out that freezing is a step in food processing. Ask, *What happened to the chocolate when you coated it on the frozen banana?* [It hardened.] Help students understand that the chocolate was liquid and, when it froze, it became solid. Mention all things are either a solid, liquid or gas, and that the change in the chocolate is a good example of change in states of matter. Ask, *Do you think coating the banana with chocolate is a step in processing it?* Make sure the students understand that they have made a processed food, banana pop, from a food in its natural state.

FOOD HAZARDS

Fresh meats, poultry and other grocery items may contain disease-causing bacteria on their surface. Always wash hands after handling raw foods, and store these items away from other food items in the refrigerator.

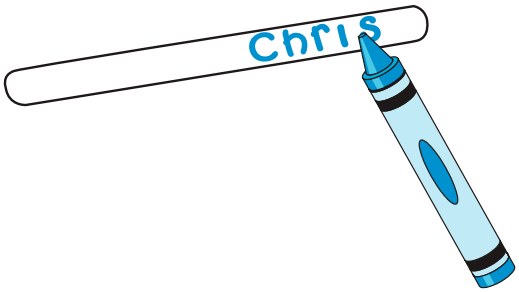
EXTENSIONS

- Use "Make a Banana Pop" sequence cards to make a recipe book.
- Use other fruits, such as strawberries, to make fruit pops.
- Experiment with other forms of food processing using ice cream or pudding.
- Have each child draw the shape of a banana on yellow construction paper and cut it out. Then have students write adjectives to describe their banana pop on the paper banana.
- Discuss other foods that have natural packaging (banana peel).

Make a Banana Pop

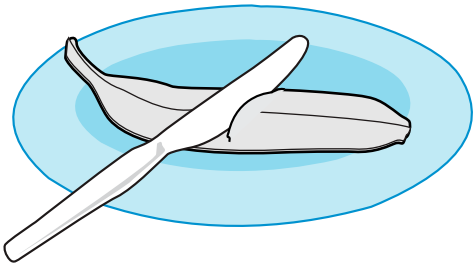
STEP

Write your name on one end of the craft stick.



STEP

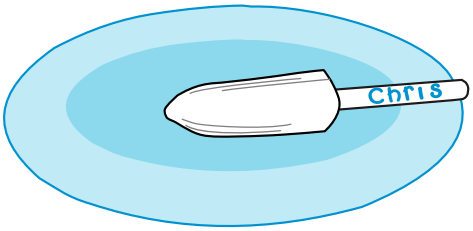
Cut one banana in half.



Peel your half of the banana. Put the peeled banana on the plate.

STEP

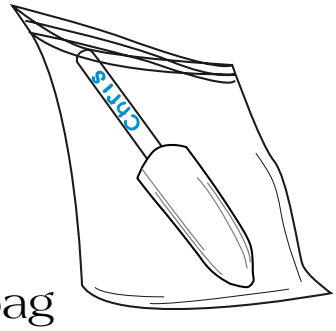
Gently push the “clean” end of your craft stick into the banana



Your name will show on the craft stick.

STEP

Place the banana in the plastic bag. Close the bag and seal it.

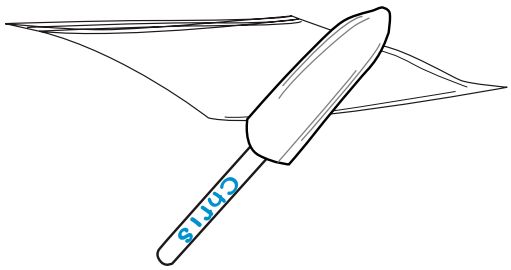


Put the bag in the freezer. Leave it there overnight.

Make a Banana Pop

STEP

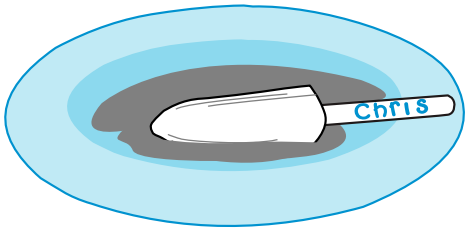
Get your bag with the frozen banana in it.



Remove the banana from the bag.

STEP

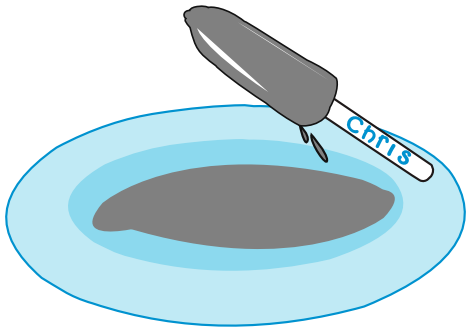
Place the banana in the chocolate sauce on the plate



Keep the craft stick out of the sauce.

STEP

Roll the banana in the chocolate sauce.



Lift the banana out of the sauce.

STEP

Observe what happens to the chocolate sauce on the banana.

Eat your treat!

Clean up.