



The Book Planter



Ag in the Classroom

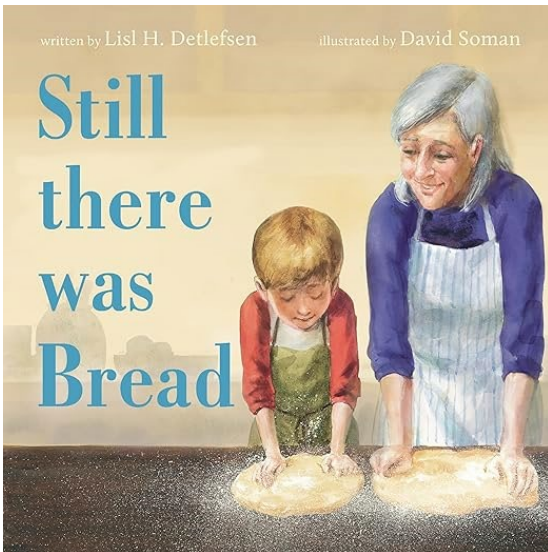
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Still there was Bread

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Nana is coming to visit! She's going to teach Little Pickle to make her famous "Nana rolls"—a special bread recipe that Nana's nana taught her. Together they gather ingredients: eggs and milk, flour and oil, sugar and salt, yeast and water. As they mix them together to form the dough, Nana shares stories about how making this treasured family recipe has changed over the years—and how it's sustained their family

through good times and hard ones. And through the times when they could be together and when they couldn't. Because sometimes a simple loaf of bread can mean so much more.

Discussion Questions

1. Make a step-by-step list of how Nana made bread when she was a little girl, including how long it took and how ingredients were gathered. Then, make a step-by-step list of how Nana and Little Pickle make bread together. What are the similarities and what are the differences? What modern luxuries do we have in modern times that make cooking easier?
2. What was going on during the Great Depression when Nana grew up?
3. What were some similarities during the Polio outbreak that Nana experienced and COVID-19?
4. How do people use bread to comfort others? Or comfort themselves?

Activity 1: Bread in a Bag¹

This activity details the instructions for making bread in a Ziploc bag. An excellent way to demonstrate bread-making and the properties of yeast within a classroom setting.

Materials

- 2 cups all-purpose flour
- 2 cups whole wheat flour
- Warm water
- 2 tablespoons sugar
- 1 package yeast or 2 ¼ teaspoons (quick rise yeast will speed things along)
- 1-2 teaspoons salt
- 1 tablespoon oil

- Plastic wrap
- Cooking oil spray
- Heavy-duty Ziploc bag
- Food handler's gloves
- Various measuring cups and spoons
- Cookie sheets
- Oven

Procedures

1. Making bread is an art and a science. Prepare for making "bread-in-a-bag" by obtaining enough ingredients for each loaf. It is best to divide your students into groups of two, but groups of four will also work.
2. Heavy-duty Ziploc bags will ensure that you will not have rips or tears causing a mess. Also the bag keeps the process neat and fairly sanitary. If you are making bread as a microorganism experiment, vary the yeast, sugar, salt, or water temperature for interesting results. The only time your students will touch the dough is when it is placed on the cookie sheet. (A cookie sheet is what is most readily available in school cafeterias, and kids can make different shaped loaves for identification. You won't need 15 bread pans!) Only one student needs to place the dough on the cookie sheet. Cheap food handler's gloves sprayed or coated with vegetable oil work great for this transfer.
3. The observations of the dough can be made throughout the kneading process. Doughs with extra sugar will seem quite a bit wetter, while those with extra yeast will seem quite hard. Students should record their observations while making the bread, while it rises (compare quick rise yeasts with regular yeasts), and then again after the bread is baked (texture, flavor, etc.).
4. In a one-gallon (heavy-duty) Ziploc bag, mix: 1/2 cup all-purpose flour 1 pkg. or 2-1/4 teaspoons yeast 1/2 cup warm water 2 tablespoons sugar.
5. Close the bag and knead it with fingers until the ingredients are completely blended.
6. Leave the bag closed, with the contents in the corner, and let rest 10 minutes. You can eliminate this wait by using instant yeast.
7. Then add: 2 cups whole wheat flour 3/4 cup warm water 1 tablespoon vegetable oil 1-2 teaspoons salt Mix well. Add enough all-purpose flour to make a stiff dough, about 1 or 1-1/2 cups.
8. Close the bag and knead it (you may need to remove some air in the bag). Add more flour until dough no longer sticks to the bag.
9. Spray the hands or gloves (food handler's gloves) with oil so there will be no sticking.
10. Open the bag and allow the dough to fall out onto clean or gloved hands.
11. Form the dough into a loaf, and place in a loaf pan or onto a cafeteria cookie sheet. Remember the dough will grow 1-1/2 times larger, so leave space between loaves if baking on a cookie sheet.

12. Cover the loaves with oil sprayed plastic wrap and allow to rise 30 (quick rise yeast) to 45 minutes.
13. Bake for 30-35 minutes in a 350-degree oven.
14. Now that's "real world" science! Students can actually figure out what yeasts need to live and what they produce as wastes, gas bubbles, or wonderful bread aroma. For more information about making bread visit the [Bread World website](#).



Activity 2: Food Safety from Farm to Fork: How Fast Will They Grow?²

Students, acting as scientists, will explore bacteria and fungi. They will design an experiment that will promote or minimize the bacterial and fungal growth on a piece of white bread. This activity can supplement any lesson on food safety or the scientific method.

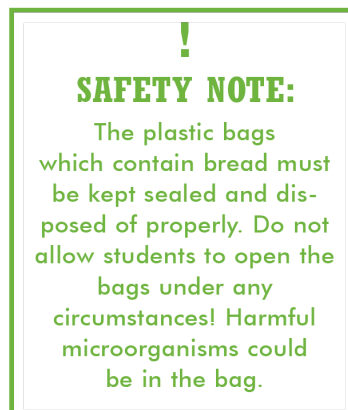
Materials

- White bread without preservatives, two pieces per team
- Re-sealable plastic bags
- Thermometer
- Dark closet or shoebox with lid
- Hand lenses or microscopes
- Water
- Eye droppers
- Refrigerator access

Procedures

1. Prior to this activity, students should understand what bacteria are and that most are beneficial. Bacteria that cause illness are called pathogens. Review if necessary.
2. Show the students the supplies for an experiment they will design. The goal is to either promote or minimize bacterial/fungal growth on a piece of white bread over a two-week period.

3. Have the students design and complete their experiments, record observations every other day and, after two weeks, write a formal lab report using the guidelines provided.
4. Discuss what is needed for bacteria to grow and what might minimize their growth. Relate this to food preservation and safety.
5. Divide students into teams of three. Assign each group one method of food preservation — drying, freezing, canning, fermenting, smoking, salting, pasteurizing. Using books and on-line sources, they are to:
 - Research their assigned form of food preservation
 - Learn about its history
 - Create a list of examples
 - Find out how it is done today
 - Create a poster with pictures and words that describes their food preservation process.



Activity 3: Bread and Geography

Materials

- Pictures of the following types of bread:
 - Challah
 - Naan
 - Fry Bread
 - Ciabatta
 - Baguette
 - Flour Tortillas
 - Anpan
 - Tunnbröd
 - Barmbrack

Procedures

1. Pair students together and have groups research one of the breads from the list.
2. They need to find the following information:
 - a. Where does the bread originate? Is it mainly consumed there, or can it be found globally?
 - b. What is the cultural significance?
 - c. What does the bread look like?
 - d. Is it eaten in a special way? (with specific foods, at certain times, etc.)
 - e. What are the ingredients to make this bread?
3. Then, student groups should create posters advertising their bread. Students should include all of the information they researched, drawings of their bread, or any other relevant information.

4. Have students present their posters to the class.
5. You can create a world map and let students post their bread pictures where the bread originates.
6. If possible and available where you live, have samples of the different breads for the students to taste.

Sources

1. <https://agclassroom.org/matrix/resource/50/>
2. <https://agclassroom.org/matrix/resource/332/>

K-5 Subject Areas: English Language Arts, Social Studies, and Science

English Language Arts

- RL.K.1 With guidance and support, identify a detail in a familiar text.
- RL.K.2 With guidance and support, identify the main topic of a familiar text.
- RL.1.1 Identify details in a familiar text.
- RL.1.2 Identify the main topic and retell key details of a text.
- RL.2.2 Identify the main topic of text.
- RL.2.4 Identify words that relate to the topic of a text.
- RL.3.2 Identify the main topic and retell key details of a text.
- RL.3.4 Identify key words that complete sentences in a text.
- RL.3.5 Locate key facts or information in a familiar text.
- RL.4.1 Identify explicit details in an informational text.
- RL.4.4 Determine the meaning of words in a text.
- RL.4.7 Interpret information presented visually, orally, or quantitatively and explain how the information contributes to an understanding of the text in which it appears.
- RL.5.1 Identify words in the text to answer a question about explicit information.

Social Studies

- K.G.1 Apply simple geographic representations, tools, and terms to describe surroundings.
- K.G.2 Understand interactions between humans and the environment.
- 1.E.1 Understand the role of basic economic concepts in the decisions people make.
- 1.G.1 Apply geographic representations, tools, and terms to describe surroundings.
- 1.G.2 Understand interactions between humans and the environment in different places and regions around the world.
- 2.E.1 Understand how the availability of resources impacts economic decisions.
- 2.G.1 Understand how interaction between humans and the physical environment is impacted by movement and settlement.
- 3.E.1 Understand how economic decisions and resources affect the local economy.
- 3.G.1 Understand how geography impacts the development of regions and communities.
- 4.E.1 Understand how economic decisions and resources affect the economy of North Carolina.
- 4.G.1 Understand the role geography has played in the development of North Carolina.
- 5.E.1 Understand how economic decisions have impacted the United States in terms of consequence, growth, and trade.
- 5.G.1 Understand the ways in which geographic factors and features have influenced development of the United States.

Science

- PS.2.1 Understand properties of solids and liquids and the changes they undergo.
- PS.3.1 Understand the structure and properties of matter before and after they undergo a change.
- PS.3.3 Understand how energy can be transferred from one object to another.
- PS.5.1 Understand the interactions of matter and energy and the changes that occur.

SO... How Fast Will They Grow?

Remember, scientists always create hypotheses, list their procedures, record their observations, and write conclusions. So, as a scientist, you will complete all of these steps on a separate sheet of paper. Here is how your completed write-up should look.

Think About It!

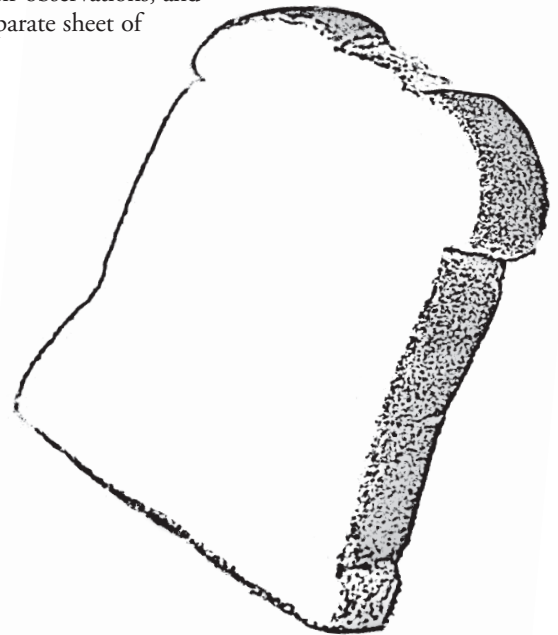
Do bacteria and fungi prefer light or dark places?
What about moisture?
What about heat?



Introduction

Bacteria and fungi are all around us. They are responsible for many things. Most importantly, they decompose dead plants and animals and convert them into soil and nutrients that other living things can use. They are a part of all ecosystems. Some bacteria and fungi, however, can be harmful. These are called pathogens. It is important for people to understand how to minimize the amount of pathogens so that the food they eat can be nutritious and safe.

You and your partner are to design an experiment that will encourage or discourage bacteria and fungi from growing on a piece of bread. Before you place it in the plastic bag, you may expose it to a doorknob, backpack, notebook, or even moisture or heat. Or, you may expose it to nothing other than the container it was in. You decide! Design your experiment, have your teacher approve your procedure, and then perform your experiment.



SAFETY NOTE:

Once you place your bread in the plastic bag and seal it, you may not open it under any circumstances. Some bacteria and fungi can be harmful. When finished with the experiment, give your bread, still in the sealed bag, to your teacher for proper disposal. You don't want to get a disease from a pathogen!