

Seeds and Whole Grains

Lesson Description

Students participate in reading the traditional Native American story “Waynabozho and the Wild Rice” to understand the importance of seeds in the plant cycle. They examine popcorn to learn about whole grains. They will then plant seeds in plastic bag seed growth chambers to observe the germination process. This lesson emphasizes the nutritional importance of eating whole grains and seeds.

- Time required: 60 minutes
- Location of lesson: Classroom

Learning Objectives

- Explain the role of seeds in the plant cycle.
- Explore the structural and nutritional difference between whole grains and refined grains.
- Appreciate that whole grains are more healthful than refined grains.

Attitude and Behavior Goals

- Eat a variety of whole grain foods.

Materials and Preparation

- Sealable plastic bags (sandwich size), 1 per student
- Paper towels, 1 per student
- Stapler
- Pre-soaked bean or pea seeds (at least 2 per student)
 - Seed Preparation: Soak beans or peas overnight in water before using for the activity.
- Watering can or cup
- Masking tape or adhesive labels
- Popped popcorn kernels – 1 bowl full
- Optional: Prepare and bring a wild rice salad
-  **Waynabozho and the Wild Rice**
-  **Seed Growth Chamber Instructions**
-  **Wild Rice Salad Recipes**
- Prepared vegetable snack of the week – 1 for each student
- Water to drink during the Class Warm-up – water dispenser in the classroom and 1 cup or a water bottle for each student

Class Warm-up: Champion Cheer and Veggie Taste Test (5-10 minutes)

- Give each student a cup of water or ensure that they have a filled water bottle in front of them.
- Give each student the prepared veggie snack of the day.
- Lead the students in enthusiastically reciting the  **Champion Cheer**.
- At the end of the cheer, drink water and eat the veggie snack together.
- Have students complete their  **Taste Test Observations** about the vegetable snack of the week.

Review of Last Lesson (2-3 minutes)

- Review the evaluation questions from last week’s lesson. Evaluation questions from all lessons are listed at the end of the workbook .

Class Discussion (5 minutes)

What do you know about seeds? Why are they important? A seed becomes a new plant. Without seeds there could be no new plants! We also eat seeds. What are some seeds that we eat? (examples: sunflower seeds; chia seeds; all types of nuts and beans are seeds) Seeds give us lots of vitamins, minerals, fiber and energy.

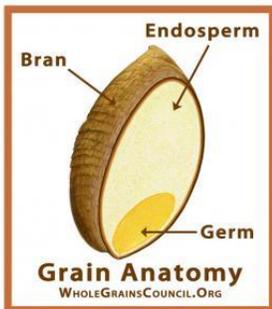
Today we will explore seeds and grains! First we will read a traditional story about why seeds are important, then we will talk about the benefits of eating whole seeds and grains. Finally, we will plant seeds in a plastic bag growth chamber and watch them grow over the next week.

Activities (40 minutes)

-  **“Waynabozho and the Wild Rice” (15 minutes)**: Students participate in reading a traditional Native American story about the importance of seeds in the plant cycle.
 1. If you have prepared a wild rice salad using the  **Wild Rice Salad Recipes**, share that with the class during or after the reading of this story.
 2. Refer students to the workbook page  **Waynabozho and the Wild Rice**. Either read the story in an engaging way to the students, or invite several students to read sections of the story out loud. Consider using one of the student’s names in place of the name “Waynabozho”.
 3. While reading the story, pause to ask some questions:
 - a. *What does “fast” mean? What do you think will happen next? Why do you think Waynabozho did that? What would you have done in his place? Why did Waynabozho get sick? Why is it important that he not eat all of the plants? Why did he need to leave some seeds behind? Why is this so important? What lessons did Waynabozho learn in the end?*

4. After the story, discuss:
 - a. Which plant parts did Waynabozho eat in the story? What other seeds do people eat?
 - b. What nutrients do we get from seeds? (Protein, healthy fats, vitamins, minerals, fiber)
5. Ask students to answer questions # 1, # 2 and # 3 in their workbooks. (What happened when Waynabozho ate all of the plants? Why was it important that he scatter some seeds into the water when he was collecting seeds? What was the “something good for the people yet to come” that he found?)

- **“Whole Grains Have it All” (5 minutes):**



1. Seeds that can be ground up to make flour, like corn and wheat, are considered grains.
2. When grains are whole, they have three parts: the bran, the endosperm and the germ. Draw a picture on the board to illustrate this, following the diagram to the left.
3. We are going to examine popcorn to learn about the three parts of a whole grain.
4. Pass the popped popcorn kernels around for the students to observe. A corn kernel is the seed for the corn plant. Can you see the 3 parts of the grain in each piece of popcorn? The bran is the brown, hard outer shell. The endosperm is the white, fluffy starchy middle. The germ is the small, hard piece at the end.
5. Often, when seeds and grains are processed into flour, companies remove the outer bran and the inner germ leaving only the fluffy white middle part. This is called a refined grain. This makes fluffy white bread and other things, but it removes most of the nutrients! The fiber, vitamins and minerals are removed. It's healthier to eat whole grains rather than refined grains because they whole grains still have all of their naturally occurring nutrients.
6. What are some examples of whole grains? (Answers: popcorn, whole wheat bread and other whole wheat products, brown rice, whole nuts and seeds with the “skin” or seed coat, whole cornmeal, etc.)

-  **“Seed Growth Chambers” (20 minutes):** Students plant a seed in a plastic bag growth chamber and make predictions about its growth.

1. **Plant!** For this activity, students may work in groups or individually. Refer students to their workbook page  **Seed Growth Chamber Instructions**.
 - a. Pass out activity materials: plastic bags, paper towels and seeds- 1 of each per group of students or 1 of each per individual student.
 - b. Model making a seed growth chamber in front of the class as you walk the class through the instructions in the workbook.

2. **Predict!** Write the following questions on the board in front of the class and ask the students to think about seeds:
 - a. *What do you think happens to a seed between the time we put it in the ground and the time we see a sprout? How long does it take to know what a seed is going to be? What questions do you have about how a seed becomes a plant? How can we test those questions?*
 - b. Write the students' answers on the board.
 - c. *Which of our questions about seeds can be answered by watching our seeds grow in the plastic bag seed chambers? What other questions do you want to add to our list?*
 - d. Have students answer the prediction questions in their workbook pages  **Seed Growth Chamber Instructions**. They will draw a picture of what their seed looks like today in the box labeled Day 1. They will draw a picture of the seed each day between now and the next lesson.
3. Tape the seed growth chambers to a window (or somewhere safe and visible) to observe the seeds growth over the next week.

Evaluation Questions (5 minutes)

1. *What does a seed do for a plant? (Answer: becomes a new plant)*
2. *What lessons did Waynabozho learn about seeds and plants?*
3. *What kinds of grains should we eat the most of- whole or refined? (Answer: whole grains)*
4. *What is the difference between whole grains and refined grains? (Answer: refined grains have been stripped of their outer layer [bran] and inner layer [germ] - and are no longer whole. They have less nutrients than whole grains.)*
5. *How much water should you drink every day? (Answer: at least 6 cups of water a day)*
6. *How many fruits and vegetables should you eat every day? (Answer: at least 5 fruits and vegetables a day)*
7. *Does gardening connect you to your culture and help you learn new words in your language? (Answer: yes)*

Preparation for Future Lessons – Reminder for the Instructor

- Review the materials and preparation needed for the next lesson.
- Remember that an Elder guest instructor is needed for these Spring lessons: lesson 1 (Eating A Rainbow), lesson 4 (The Water Cycle), and lesson 9 (Plant Parts: Pollination).

Notes
