

**Ready for Spring? Creating a Plastic Bag Greenhouse**

<b>Grade(s): 2-5</b>	<b>Topic: Plant Life Cycle, Spring, Seed Germination</b>	<b>Season: Late Spring (April or May) a few weeks before the last frost</b>
<p><b>Timing:</b> 60 minutes total – 5 minute RPK, 5 minute intro, 25 minute indoor plastic bag greenhouse experiment setup, 25 minute “Ready for Spring” activities outside, and 5 minute conclusion.</p> <p><b>Follow-Up:</b> Students will observe their plastic bag greenhouse in class over the coming weeks in a classroom window (time is allotted for this in the following Seed Germination lesson)</p>		
<p><b>Learning Objectives:</b></p> <ul style="list-style-type: none"> <li>• Students will set up their own seed germination experiment, and will make hypotheses about what will happen to their seeds as they grow</li> <li>• Students will be able to identify necessary conditions for seeds to sprout and get a basic understanding of a seeds’ structure</li> <li>• Students will be able to explain that that most plants come from a seed, and that seeds contain all that a plant needs to start growing</li> </ul>		
<p><b>Materials:</b></p> <p><u>For Plastic Bag Greenhouses</u></p> <ul style="list-style-type: none"> <li>• Medium-sized plastic bags, 1 for every student</li> <li>• Pea, bean, or popcorn seeds (can be bought at any supermarket)</li> <li>• Staplers</li> <li>• Paper towels</li> <li>• Permanent markers</li> <li>• Duct tape</li> <li>• <i>Plastic Bag Greenhouse</i> worksheets</li> </ul> <p><u>For Ready for Spring Activity</u></p> <ul style="list-style-type: none"> <li>• Magnifiers</li> <li>• Trowels</li> <li>• Thermometers</li> <li>• Sunrise and sunset charts</li> <li>• <i>Ready for Spring?</i> worksheets (use version most applicable for your age group)</li> <li>• Seed packets that class will plant in following lesson (optional)</li> <li>• Rulers</li> </ul>		
<p><b>Prep Needed:</b></p> <ul style="list-style-type: none"> <li>• Soak plastic bag greenhouse seeds for 3-4 hours before setting up experiment.</li> <li>• Draw lines approx. 2 inches from top of plastic bags across top of bags with permanent marker so that students or helpers know where to staple bags.</li> </ul>		
<p><b>Degree of need for extra teacher or parent helper?</b> High</p>		
<p><b>Journal Prompt:</b> What does a seed need in order to grow?</p>		
<p><b>Lesson Sequence:</b></p> <p><b>Reactivate Prior Knowledge (5 minutes)</b></p> <p>Pass around the seeds the students will be “planting” in their plastic bag greenhouses. Can students recognize what vegetables they come from? What is inside a seed? Break one open and show the insides. Introduce the information that seeds contain a great deal of nutrients that will help the plant to grow if the seeds germinate. Some of these seeds, like the ones that we eat, will never grow (because they are broken down in our stomachs and</p>		

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we use the nutrients to grow instead), but some will! Today we're going to try to start growing some of them in class in a plastic bag greenhouse. What do you think the seeds need to get started?

### **Introduction (5 minutes)**

Explain to the students that most seeds have a seed coat and embryo that contains the food for the food for the new plant. Have students sketch the different seeds they'll be trying to germinate in their greenhouse. Ask students why they think plants usually start growing in spring. What conditions are right then for plants to sprout?

### **Plastic Bag Greenhouse Experiment Setup (25 minutes, inside)**

In this experiment students will set up seeds to sprout in plastic bag greenhouses and make guesses about how they will develop. The objective is to demonstrate the start of the plant life cycle for students.

Follow the instructions on the worksheet. Lead students through experiment and make sure that they are equipped to check plants in a week or two (time for plant checking is allotted in the Soil Seed Germination lesson that follows).

### **Ready for Spring? (25 minutes, outside)**

*NOTE: Use Older/Younger version depending on appropriateness for your students.*

This activity is designed for students to make a guess about whether or not we can begin planting outside. Students will take measurements of air temperature, soil temperature, calculate hours of sunlight and compare this with requirements on seed packets for plants they will be planting in the following lesson, if applicable.

Follow the instructions on the worksheet. Lead students through observations and experiments.

### **Conclusion (5 minutes, inside or outside)**

Have everyone share one observation or prediction about their plastic bag greenhouse seeds or about whether they think its time for plants to grow outside. Make sure that the latter is based on a fact they observed/checked outside.

### **Vocabulary**

Embryo  
Germinate  
Hypothesis  
Life Cycle  
Seed Coat  
Soak

### **Vocabulario**

Ciclo de Vida  
Embrión  
Empapar  
Germinar  
Hipótesis

Tegumento Seminal

**Extensions / Homework Ideas:**

- Try the plastic bag greenhouse experiment with another type of seed. Use the same worksheet and have students hypothesize about whether things will be the same or different.
- Using information about sunrise and sunset times and average temperatures, try and figure out when some of the seeds from the following *Ready for Spring?* activity can be planted.