Every experiment begins with a hypothesis. In this hands-on science lesson, young botanists will learn about making educated guesses by planting and observing the growth of their very own lima bean seeds.

Learning Objectives

Students will be able to follow basic instructions and make predictions for short experiments.

<table>
<thead>
<tr>
<th>Materials and Preparation</th>
<th>Key Terms:</th>
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<tbody>
<tr>
<td>Paper towels</td>
<td>seed</td>
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<tr>
<td>Water</td>
<td>hypothesis</td>
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<tr>
<td>Sandwich bags</td>
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<td>Lima bean seeds</td>
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<tr>
<td>Permanent marker</td>
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<tr>
<td>White paper</td>
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<td>Stapler</td>
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<td>Colored pencils</td>
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<td>Tape</td>
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Lesson

Introduction (10 minutes)

- Review the concept of plants. Explain that a seed can be thought of as a baby plant. If it has water, sunlight, and soil, a seed can grow into a tree, flower, fruit, or vegetable.
- Let students know that today’s lesson will involve an experiment on seeds. Each student will need to make a hypothesis, or a guess on how the experiment will turn out.

Explicit Instruction/Teacher Modeling (5 minutes)

- Model the main activity for your students.
- Wet a paper towel.
- Place the towel into a sandwich bag.
- Drop two lima bean seeds into the bag, then seal it.

Guided Practice/Interactive Modeling (10 minutes)

- Ask for volunteers to recount the actions that you took.
- Write down the most accurate statements on the board. Students can refer to what you’ve written down if they forget any of the steps of the experiment.

Independent Working Time (20 minutes)

- Have students follow your model and create their own seed bags.
- As they finish, visit each student and write down her name on her bag with the marker.
- Have students return to their seats and assemble their observation logs. To do so, they will each fold four pieces of white paper in half, then staple them together at the folds to make a booklet.
- Have them decorate the front cover of their observation logs with pictures of seeds or plants. They should also make sure to have their names and the words "Lima Bean Observation Log" written on the covers.
- On the first page, have them each draw their seeds and write a sentence or two describing them.

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Extend

Differentiation

- **Enrichment**: Have advanced students make more detailed observations in their logs. Instead of writing 1-2 sentences describing their seeds, they can write 3-4. For the hypothesis portion, they can also write down how they think the beans will look once they sprout.
- **Support**: Reduce the workload for struggling students. Make the drawing portions of the assignment optional for them; this will give them more time to complete the writing portions.

Review

Assessment *(10 minutes)*

- As you circulate the room to label the bags, observe students as they work.
- Make notes of common difficulties that they have, e.g. with following the experiment directions.

Review and Closing *(5 minutes)*

- Have students hang their seed bags behind classroom windows. Label and hang up your own as well.
- Ask students to return to their seats.
- Have them use their observation logs to record their hypothesis for how long it will take for the seeds to sprout.