

Sprouting Scientists! (1)

Standard IV

Students will gain an understanding of Life Science through the study of changes in organisms over time and the nature of living things.

Objective 2

Living things change and depend upon their environment to satisfy their basic needs.

Intended Learning Outcomes

Generating Evidence: Using the processes of scientific investigation (i.e. framing questions, designing investigations, conducting investigations, collecting data, drawing conclusions)

Communicating Science: Communicating effectively using science language and reasoning.

Content Connections: Language Arts, Math

Background Information

This activity is designed to give students the opportunity to observe and describe plants as they grow from seeds. It is recommended that you teach All Sorts of Seeds Travel! prior to this activity so that students have had the opportunity to manipulate seeds. Students will also have the chance to use many process skills throughout this unit. You may teach the process skills in isolation, earlier in the school year, or concurrent with the activity (i.e. symbolization, observation, description, prediction, data collection, investigation, classification, segmentation and blending, problem solving, forming conclusions).

Research Basis

Shepardson, D.P. (1999). Learning Science in a First Grade Science Activity. A Vygotskian Perspective. *Science Education*, 83(5), 621-637.

Classroom vignettes and child interviews illustrate that teachers can mediate students' learning by enacting these roles within the context of an activity: facilitator, guide and supporter, active participant and evaluator. As the teacher mediates, children construct their own knowledge.

Invitation to Learn

Show students part of Magic School Bus Gets Planted. It can be downloaded from the UEN website. Go to UEN.org from there go to Pioneer Library. Click on K-12 schools. You will have to log in here if you are not on your school internet link. Click on e-

media. Click on from. In Utah Core Area click science. In quick search Type magic school bus. Click on find. Scroll down to find the movie you want to download. Click view info. Click Download Now. Click video for download-Quick Time.

Materials

- 4 inch glass squares
- Viva paper towels
- Alfalfa seeds
- Plant Journal
- Water dropper
- Cookie sheet

Instructional Procedures

1. Give each student an alfalfa seed to look at. Ask what will happen if I take one of these alfalfa seeds and plant it? Use the alpha boxes to record claims of knowledge and questions about what will happen. Record only the key word of student comments in the appropriate box. Be sure to use follow-up questions in response to student statements in order to better understand what they know and have already experienced. Urge students to think of questions they might have about how seeds grow into plants. (e.g., “How long will it take to sprout?” “What will the roots look like?” “How tall will it grow to be?” “How many leaves will it have?,” etc...). It is critical for students to establish that they would like to plant the seeds and “see what happens” in order to validate their predictions and answer their questions.

2. Have students’ generate and record questions in their Plant Journal.

3. In groups have students “plant” the alfalfa seeds. Follow directions below:

4. Take two, four-inch squares of glass. No thicker than $\frac{1}{4}$ inch. Place one sheet of glass down. Take a Viva paper towel (this brand works best for this project) and fold it so it is about $\frac{1}{2}$ inch bigger than the glass on one side. Do not have more than two thicknesses of the paper towel. Place the paper towel on the glass.

5. Using a water dropper get the paper towel slightly wet, across the center making sure that the water line and the $\frac{1}{2}$ inch extra paper towel are parallel. Place a row of alfalfa seeds directly on the wet area. Place the other glass over the seeds, and rubber band them together.

6. Place the sheets of glass on the edge of a cookie sheet with the extra paper towel hanging into the cookie sheet. Place the cookie sheet near a window. Put some water in the bottom of the cookie sheet. The paper towels will absorb the water up to the seeds. These needs to be watered often but, make sure you do not over water the seeds and check on the water levels often.

7. During the growing of the alfalfa, students will keep a Plant Journal. They will record observations each day or every other day as you see fit.

8. When the growing is done return to the questions students recorded in their journals along the way as well as to the alpha boxes.

9. Finally, if the seeds were purchased at a health food store, the alfalfa may be eaten. Have students write a three to five sentence paper on what they learned about sprouting and growing plants.

Assessment Suggestions

- Use the students' plant journal.

Possible Extensions/Adaptations/Integration

- Expose students to nonfiction books on plants and the growth cycle. Books like *Maple Tree* and *Sunflower* are especially nice because they have vivid photography that is both stimulating and informative to young scientists/data recorders.
- Share *How a Seed Grows* with your class. As an additional study of how plants grow, complete the activity described in the book.
- Integrate this unit with subtraction practice. Read *Ten Seeds*. Challenge students to write subtraction stories to match what is happening in the story, in word and/or number sentences.
- Using *Ten Seeds* as a reference, invite students to write their own stories (both addition and subtraction) using nature as the setting. Provide them with manipulatives like plastic worms or foam flowers to help spark their imaginations.
- Have the students complete daily graphs by answering questions/collecting data on the topic of seeds and plant growth.
- Give students (especially ESL) their own individual "plant dictionaries." Provide them with vocabulary and pictures to paste into their dictionaries as the unit progresses.
- Provide scaffolding for emergent writers by posting the Seed/Plant Word Wall that you created in the All Sorts of Seeds! activity. Accommodate for ESL learners by providing pictures/illustrations next to the words.

Family Connections

- Have students write a letter to a family member telling about the growth of the seeds/plants.
- Send students home with alfalfa seeds to sprout and grow at home. Have them record the daily changes in the seeds.

Additional Resources

Books

I'm a Seed, by Jean Marzollo; ISBN 0-590-26586-5

Sunflower, by David M. Schwartz; ISBN 1-57471-581-X

Maple Tree, by David M. Schwartz; ISBN 1-57471-556-9

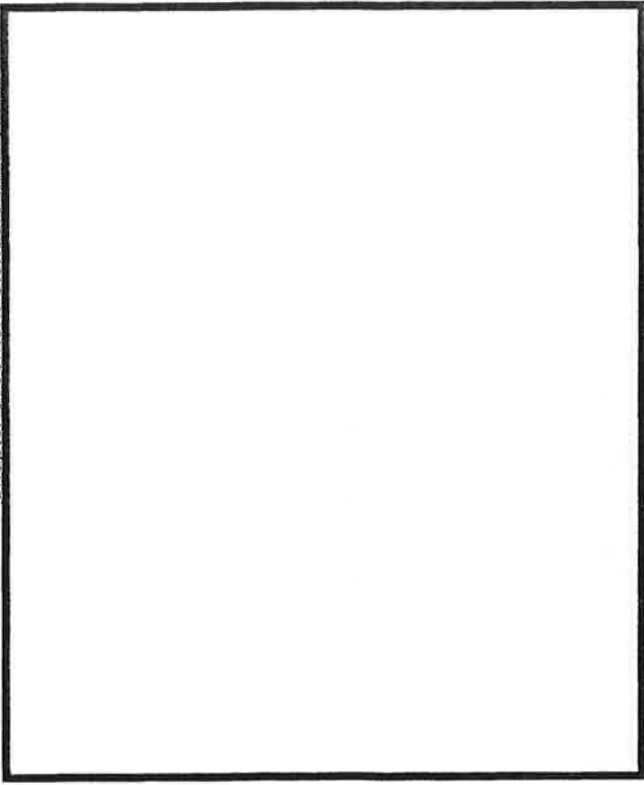
Plant Leaves, by David M. Schwartz; ISBN 1-57471-328-0
Plant Blossoms, by David M. Schwartz; ISBN 1-57471-329-9
Plant Stems & Roots, by David M. Schwartz; ISBN 1-57471-327-2
From Seed to Plant, by Gail Gibbons; ISBN 0-590-63892-0
A Tree is a Plant, by Clyde Robert Bulla; ISBN 0-439-45614-2
Ten Seeds, by Ruth Brown; ISBN 0-375-80697
How a Seed Grows, by Helene J. Jordan; ISBN 0-06-020185-1

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My Plant Journal

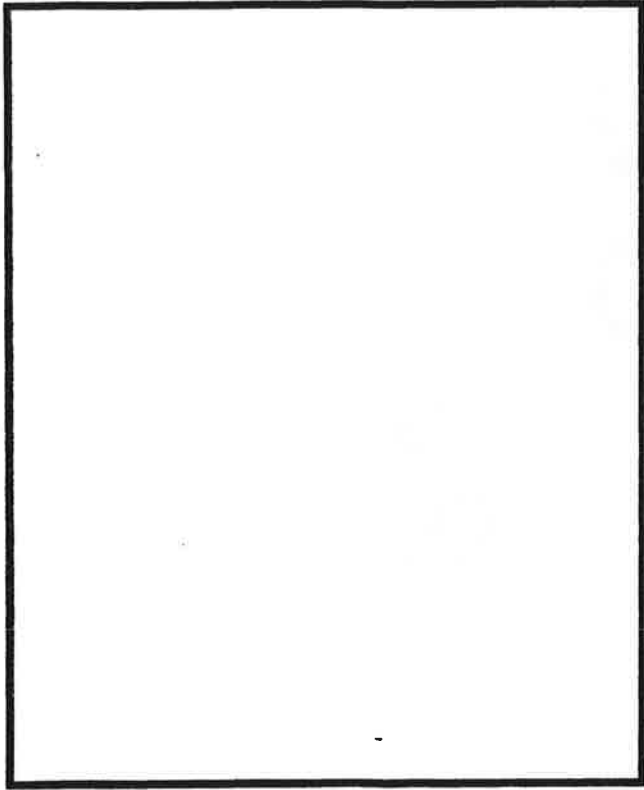
By _____

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Date: _____

Things I observed today are _____



Date: _____

Things I observed today are _____
