

The Need for Seeds: How Plants Grow & Feed the World

Special Area: Preschool, Level II

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Length of Unit: Five Lessons (approximately 30 to 40 minutes each)

I. **ABSTRACT**

- A. Discover fun activities and resources that will help children demonstrate an initial understanding of plants in the living world. Be prepared to participate in singing, movement, and a tasting activity.

II. **OVERVIEW**

- A. Content from the Core Knowledge Preschool Sequence
 - 1. Scientific Reasoning & the Physical World (page 86)
 - a. Plant, care for & record observations of a plant, noting the parts of the plant, needs, development & life cycle
 - 2. Mathematical Reasoning & Number Sense (page 63)
 - a. Classify objects/pictures using a single criterion: color, shape, size

III. **BACKGROUND KNOWLEDGE**

- A. For Teachers
 - 1. Heller, Ruth. *The Reason for a Flower*.
 - 2. Jordan, Helene J. *How a Seed Grows*.
 - 3. Moore, Joe Ellen & Evans, Joy. *Learning About Plants*.

IV. **PREREQUISITE PRIOR KNOWLEDGE FOR STUDENTS**

- A. For Students
 - 1. Classify objects/pictures using a single criterion: color, shape, size, texture
 - 2. Listen to, sing, and perform children's songs and fingerplays individually or with others
 - 3. Attend and listen to picture books with storylines (30 minutes), as well as books of other genres, such as informational books (15 minutes).

V. **RESOURCES**

- A. Berger, Melvin. *From Peanut to Peanut Butter* (Lesson Five)
- B. Ehlert, Lois. *Eating the Alphabet* (Lesson Six)
- C. Heller, Ruth. *The Reason for a Flower* (Lesson One)
- D. Jordan, Helene J. *How a Seed Grows* (Lesson Three)
- E. Moore, Joe Ellen & Evans, Joy. *Learning About Plants* (Lessons Two, Four, and Six)
- F. Saunders-Smith. *Eating Apples* (Lesson Five)
- G. Schwartz, David. *Life Cycles: Bean* (Lessons Three and Four)
- H. Schwartz, David. *Life Cycles: Maple Tree* (Lesson Six)
- I. Schwartz, David. *Life Cycles: Sunflower* (Lesson Four)

VI. LESSONS

Lesson One: Seeds: What They Look Like and Where You Find Them

- A. *Daily Objective(s)*
1. Children will gain understanding of plants in the living world by observing, sorting, and discussing a variety of seeds.
 2. Children will classify seeds using a single criterion: color, shape, size.
- B. *Grouping*
1. Whole group instruction for procedures 1-4 and small group instruction for procedures 5 – 7.
- C. *Materials and Preparation*
1. Heller, Ruth. *The Reason for a Flower*.
 2. Packets of seeds (a variety of sizes and shapes)
 3. Fruits with seeds (apple, pear, orange, grape, etc.)
 4. Coconut (one of the largest seeds)
 5. Nuts (a variety still in the shells)
 6. Seeds still in pods
 7. Pine cones
 8. Dried sunflower head
 9. Knife for slicing fruit
 10. Nut cracker
 11. Two trays or plates (one for slicing, one for displaying seeds)
 12. Bag or box to conceal the coconut, fruit, pine cone, and pods
 13. A plate for each child
 14. A sorting tray or set of bowls for each child in the small group
 15. Student questionnaire (appendix A)
- D. *Language of Instruction*
1. Teacher: *life cycle, living, alive, flower, fruit, grow, plant, seed, water*
 2. Students: *alive, flower, fruit, grow, light, living, plant, seed, water*
- E. *Procedures/Activities*
1. Have the children on the carpet (whole group). Display the seed packets and ask, *Does anyone know what these are? Yes, these are seed packets full of seeds. What do you do with them? That's right, you plant the seeds. Why do people plant seeds? Right! People plant seeds to grow plants.*
 2. Hold up a specific packet and ask, *How do you think the seeds will look? Will they be large, small, round, or thin?* Open the packet, pour the seeds on the tray, and let the children see the seeds. Discuss how the seeds actually look. Point out size, shape, color, and texture. Continue this procedure with each seed packet.
 3. Remove the coconut from the bag or box and say, *This is a seed. Do you know what this seed is called? Right! It's a coconut. It's one of the largest seeds. During small group time, you will get to look at all of these seeds, touch them, and sort them.*
 4. *Before we go to small groups, I'm going to read the part of this story that tells about seeds.* Read the first sixteen pages of *The Reason for a Flower*. (There are very few words, so this will only take a couple of minutes.)
 5. Let the children go to small groups. Learning activities are set up at each table. The other activities are activities the children can complete without assistance. At the science table, sit with the children and lead

the observation activity. Show a seed packet and point out the picture on the packet. Explain, *This is the kind of plant that will grow from these seeds.* Sprinkle a few seeds from the packet onto each child's plate and give the children time to observe and touch the seeds. Do this with each packet of seeds.

6. Give each child in the small group a sorting tray or a set of bowls and have them sort the seeds according to type. You may also have them sort by shape (all the round, all the elongated, all the tear-shaped), by size (large, medium, or small), or by texture (smooth, ridged, fluffy, or sticky). When the children finish or start losing interest, clear the table.
7. Ask the children in the small group, *Where do you find seeds in nature? Where did the seeds in the packet come from?* Place a tray on the table with the apple, pear, grape, orange, pea pod, and nuts. Say, *Some seeds are found in soft fruits like these. Some seeds have hard shells like these nuts, and some are found in pods like these peas and beans. Some are found in cones like these.* Cut the fruit, crack the nuts, and open the pods to let the children see the seeds inside.

F. *Go A Little Further*

1. For students who have difficulty- Read the story to the child individually and give individual guidance/assistance for the sorting activity.
2. For students who excel- Allow these children to come up with other ways the seeds could be grouped. Example: group them according to flower seeds, fruit seeds, vegetable seeds, grains, individual pits, multiple seeds, etc.

G. *Assessment/Evaluation*

1. Have each child dictate answers to the questions on the Student Questionnaire on Plants. (appendix A, questions 1& 2) 4KD-SP-A4
2. Observe each child in the small-group sorting activity to evaluate his/her success in sorting by type, shape, or size. Record the results of your observation on a sheet. 4KD-MR-A3A color, 4KD-MR-A3B shape, 4KD-MR-A3C size

Lesson Two: How Seeds Travel

A. *Daily Objective(s)*

1. Children will gain understanding of plants in the living world by exploring & discovering the means in which seeds travel.

B. *Grouping*

1. Whole group instruction

C. *Materials and Preparation*

1. Heller, Ruth. *The Reason for a Flower.* (pages 17-20)
2. Seeds with fluff or fuzz that are blown by the wind (dandelion, cattail, maple)
3. Seeds with burrs or stickers that cling to fabric or fur (queen anne's lace, cockle burr, sand burr)
4. Seeds with a Velcro texture that cling to fabric or fur (beggar's lice)
5. Blow dryer or fan
6. Container of water
7. Tray
8. Stuffed animal (a squirrel would be preferable)
9. Student questionnaire (appendix A)

D. *Language of Instruction*

1. Teacher: *water, seed, plant, air*
 2. Student: *(same as teacher)*
- E. *Procedures/Activities*
1. Have the children on the carpet for whole-group instruction. Show the “Seeds Can Travel” sheet on page 27 of *Learning About Plants*. Discuss the things happening in the picture.
 2. Read pages 1-20 of *The Reason for a Flower* to the children. Go back to pages 17 and 18 that refer directly to seed travel and spend some extra time discussing the illustrations and the ways the seeds are being moved or traveling. (animals gathering them for food, an animal carrying them because the seeds are stuck in its fur, wind blowing them)
 3. Tell the children, *We are going to make some seeds travel or move.* Place the hair dryer, container of water, tray, and stuffed animal on the carpet. Ask, *Which of these could we use to be “the wind?” Right! The hair dryer will move the air like the wind outside.* Use the dryer to move seeds on the tray. Ask, *How can the squirrel move a seed? Right! Squirrels gather nuts to eat. A nut is a seed, and sometimes the squirrel forgets where it took the nut and buried it. Is there another way a squirrel could move a seed? It could get a seed that’s sticky or fuzzy stuck in its fur. The seed rides around on the fur until it falls out.* Use the stuffed squirrel to act out taking a nut and burying it. Make it come back to where it buried it and act like it can’t find it. Make the squirrel leave without the nut. Have a sticky seed in the squirrel’s path and make it stick to the fur. If a child doesn’t call attention to it, make sure you do. Pour water on a tray of seeds and have the children observe the result. Discuss what happened with the blow dryer, the squirrel, and the water.
- F. *Go A Little Further*
1. For students who have difficulty- Repeat the discussion of the “Seeds Can Travel” sheet and the illustrations on pages 17 & 18 of *The Reason for a Flower* with an individual child or with a small group.
 2. For students who excel- Have them think of other animals that move seeds, how they move them, and why. Example- Stella Luna is a fruit bat that eats fruit and scatters the seeds. Some animals eat things with seeds, its stomach doesn’t digest the seeds, so the seeds are relocated when the animal uses the bathroom.
- H. *Assessment/Evaluation*
1. Have the child answer question three from the Student Questionnaire. (appendix A)

Lesson Three: Needs of Seeds: What Seeds Need to Live and Grow

- A. *Daily Objective(s)*
1. Children will gain understanding of plants in the living world by planting a seed in a container and observing the plant’s development.
- B. *Grouping*
1. Whole group instruction for procedure one and small group instruction for the remaining procedures
- C. *Materials and Preparation*
1. Tub of potting soil
 2. Tub of pea gravel

3. Cups or scoops for the potting soil and pea gravel (two or three per tub)
4. Clear plastic cup for each child with holes punched in the bottom and two lines drawn with permanent marker circling the cup
One line should be in one color (red) and drawn one half inch from the bottom. The second line should be drawn in a different color (black) and should circle the cup three or four inches from the bottom.
5. Permanent markers (at least one for each child in the small group)
6. Jordan, Helene J. *How a Seed Grows*
7. Seeds
8. Small watering cans or containers full of water (two or three)
9. *Native American Songs* CD
10. *Peabody Early Experiences Kit (PEEK) cassette*
11. Schwartz, David. *Life Cycles: Sunflower*

D. *Language of Instruction*

1. Teacher: *grow, light, plant, roots, seed, water, soil, temperature*
2. Student: *grow, light, plant, seed, water*

E. *Procedures/Activities*

1. Have the children on the carpet and read *How a Seed Grows* by Helene Jordan. Say, *Think about the story. What were some things plants need to live and grow? Right, plants need soil, water, light, and air to live and grow. We are going to plant a seed at small group time. If we want it to grow, we will have to give it soil, water, light, and air.* Send the children to small groups.
2. Have the cups and permanent markers on the science table. While other small groups are working independently at other tables, have the children at the science table with you write their names on a cup. Then let the children use the markers to decorate the cup.
3. Remind the children that plants need soil and water to live and grow. Explain, *Plants need water, but too much water can hurt or kill a plant. Different kinds of plants need different amounts of water. Some need a little and some need a lot. Your cup has holes in the bottom. Do you know why? Right, we want the plant to have enough water, but not too much. The holes will let the extra water drain out. We don't want our soil to wash out with the water, so we are going to put small rocks in the bottom. These rocks will help the soil stay in the cup when the extra water drains out.*
4. Place the tub of pea gravel on the table and say, *Fill your cup with the pea gravel up to the red line.* (Demonstrate each step as you give the directions.) When each child in the group has finished, remove the tub of pea gravel. Place the tub of soil on the table and say, *Fill the cup with potting soil up to the black line.* After each child has completed this step, say, *Stick your finger in the soil to make three holes.* Let each child pick two or three different kinds of seeds and say, *Drop one seed in each hole and then cover the seed very gently with the soil. Now our seeds have soil. Remember, plants also need water to live and grow.* Take the soil tub from the table and put the watering cans or containers on the table. Say, *Pour water over the soil until you see some of the water running out of the holes in the bottom. Put your cup by the window so your seed can have light and in a few days, if things go right, we will see little green shoots.*

5. Have the children go back to the carpet to listen to and sing *Sun and Rain* from the Native American Songs CD and *Farmer, Farmer* from the PEEK cassette.
- F. *Go A Little Further*
1. For students who have difficulty- Read the story to the child or a small group and give these students additional help with the planting steps in procedure four.
 2. For students who excel- Have these students in the small group together. For procedure four, give all of the steps and demonstrations at one time, and let these students complete the activity independently with little teacher explanation.
- G. *Assessment/Evaluation*
1. Observe as the children complete the activity in procedure 4.
 2. Have the child answer question four on the Student Questionnaire.

Lesson Four: Plant Parts

Daily Objective(s)

1. Children will gain understanding of plants in the living world by exploring and discussing plant parts and the part functions.
- B. *Grouping*
1. Whole group for procedure one, three, and four and small group for the remaining procedures
- C. *Materials and Preparation*
1. An activity sheet for each child from *Learning About Plants* by Jo Ellen Moore & Joy Evans (page 10)
 2. scissors for each child
 3. glue
 4. a brown crayon for each child
 5. a brown marker for each child
 6. 2 x 2 inch square of green construction paper
 7. Small plants
 8. *Life Cycles: Maple Tree* by David Schwartz
 9. Small cup of water and straw for each child
 10. *Student questionnaire*
- D. *Language of Instruction*
1. Teacher: *development, life cycle, growth, shoot, sprout, stem, seed, roots, leaf, flower*
 2. Student: *seed, roots, leaf, flower*
- E. *Procedures/Activities*
1. Have the children on the carpet and read *Life Cycles: Maple Tree*.
 2. Send the children to small group tables where they work independently. Say to the group at the science table, *We're going to work on this paper to make a tree with all its parts.* (Show the sheet copied from page 10 of *Learning About Plants*.) Point out each of the parts and explain its function. Ask, *Is there something the tree is missing? Right, it doesn't have leaves. This may be a picture of a tree in winter and its leaves have fallen off. Use the brown crayon to color the trunk of the tree. Use the brown marker to color the tree's branches. Don't color the roots. Leave them white. Cut along the dotted lines. Glue the roots and trunk where each belongs in the picture.*

We're going to make green leaves for our tree. Cut the green square into little pieces and glue the pieces to the tree branches. Leaves help the plant use the minerals and light to make food for the plant. They also help the plant "breathe".

3. Have the children go back to the carpet after small group time. Place the tray of small plants on the carpet and ask, *What plant parts do you see on these plants? Do you see roots? Why not? Right, the roots are under the soil. Let's get the plants out of the soil so we can look at the roots.* Take the plants out of the soil and pass them around so the children can examine them.
4. Let each child have a cup of water and a straw. Say, *roots work a lot like a straw. It pulls the water up so you can drink it. Roots pull water out of the soil so the plant can "drink" it.* Have the children drink through the straw. *Minerals are in the soil and are food for the plant. The roots pull minerals in with the water.* Add a small amount of sugar to each child's water. Have the children drink through the straw again. *Did you taste the sugar in the water? Can you see the sugar in the water? That's how the minerals work. They enter the plant through the roots with the water and help the plant grow. Roots also help hold the plant in the ground.*

F. *Go A Little Further*

1. For students who have difficulty- Give more assistance with the cutting and gluing activity. Read the story to the child individually.
2. For students who excel- Let the children brainstorm and draw additional tree parts. (Fruit, pine cones, blossoms, nuts, etc.)

G. *Assessment/Evaluation*

1. Have the children complete item nine on the student questionnaire.

Lesson Five: Plant Uses and Products

A. *Daily Objective(s)*

1. Children will gain understanding of plants in the living world by exploring and discussing plant uses and products.

B. *Grouping*

1. Whole group instruction for procedures one through 4 and small group instruction for the last.

C. *Materials and Preparation*

1. Cotton boll
2. Cotton napkin, wash cloth, underwear, cotton ball, q-tip
3. Raw peanut in hull
4. Peanut oil, peanut butter, dry-roasted peanuts
5. Dried Corn on cob
6. Corn meal, corn flakes, canned corn
7. Picture cards of foods that come from plant seeds
8. A variety of seeds for tasting: sunflower, pumpkin, peanuts, other nuts, beans, popcorn, peas, whole coconut
9. Pages 33 and 34 from Learning About Plants by Evan-Moor

D. *Language of Instruction*

1. Teacher: *products, raw, materials, processing/processed, boll, hull, erosion, landscaping*
2. Student: *hull, raw, boll, materials, products*

- E. *Procedures/Activities*
1. Have the children on the carpet and show the cotton boll. Ask, *What is this? What do people do with it? It's a cotton boll. People use the cotton part to make clothes, towels, cotton balls, q-tips, etc. People use the seeds to make oil for cooking. The cotton boll is the raw product. The stuff made from the cotton boll is the product.*
 2. Have the students complete page 33 from Evan-MoorCorp's Learning About Plants.
 3. Repeat the procedure with the peanut & the peanut products. Read From Peanuts to Peanut Butter by Melvin Berger.
 4. Discuss the uses of plants and seeds, other than making products already discussed. Say, *What else are plants used for? Wood from trees is used to make lumber for building things; for paper that we draw and write on; and for cardboard boxes, toilet tissue, and paper towels.* Have the students complete page 34 from Learning About Plants. *Plants are used for ground cover to stop erosion, as wind breaks, and to make places look nice (landscaping).*
 5. Discuss seeds that are used for food. Corn, sunflower seeds, pumpkin seeds, popcorn, beans, peas, nuts, etc.
 6. Let students taste a variety of seeds.
- F. *Go A Little Further*
1. For students who have difficulty- Repeat procedure 1-4 with a small group or individually.
 2. For students who excel- Expand the raw materials/product concept by looking at ingredients on food packages.
- G. *Assessment/Evaluation*
1. Have each child dictate answers to question 5 on the Student Questionnaire.
 2. Monitor discussion responses from individual students.

VII. CULMINATING ACTIVITY

- A. Have a "Seed Celebration" with activities and snacks centering around seeds: Seed art, seed snacks, seed games, and songs.

VIII. HANDOUTS/WORKSHEETS

- A. Appendix A- Student Questionnaire on Plants

IX. BIBLIOGRAPHY

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Appendix A

Student Questionnaire on Plants

Name of Assessing Teacher _____ Date _____

Student _____ CKPAT skill 4KD-SP-A4

1. If you want a new plant, what do you do? (*Plant a seed*) _____

2. What can seeds look like? (*Different textures-smooth, rough, sticky, fuzzy, fluffy; different sizes, different colors, different shapes*) _____

3. What are some ways a seed can travel? (*Being carried in an animals fur, blown in the wind, carried by running water, carried and buried by an animal*)

4. What do seeds need to grow? (*soil, water, light, air*) _____

5. Plants are used for lots of things. Name some of the things plants give us. (*Food, building materials, shade, medicine, perfume, fibers*) _____

6. What is a plant root that some people eat? (*carrot, turnip, radish*) _____

Appendix A, page 2

7. What is a leaf some people eat? (*lettuce, cabbage, turnip greens*) _____

8. What is a seed some people eat? (*sunflower, corn, bean*) _____

9. Have the child draw a plant with all its parts and then label parts as the child dictates.

