

Cultivating Joy & Wonder

through Nature, Food & Community-Based Learning

Education for Sustainability in Early Childhood Settings

NAEYC Annual Conference & Expo

November 7, 2012

Ruth Kagle
Sustainability Academy
at Lawrence Barnes
rkagle@bsdvt.org

Linda Wellings
Shelburne Farms
lwellings@shelburnefarms.org

DRAFT
ACTIVITIES



Corn



How are we connected? • fall

WHAT'S THE Big Idea?

Interdependence
Cycles

Enduring Understandings

- We need food to live.
- We rely on each other and other living things to meet our needs.
- Knowing where our food and fibers come from is important to understanding the relationship between humans and the natural world.

Objectives

- Children cultivate an understanding of where their food originates.
- Children engage in processing food by demonstrating the use of simple machines to grind wheat.
- Children show interest and curiosity in processing raw food into finished food products.

Directions

1. Have corn stalks and ears of corn available for the children to examine.
2. Fill the water table with loose field corn kernels for exploration. Place some field corn on the cob in the table for children to remove the corn from the cob.
3. Ask the children if they like corn. If yes, how do they like to eat their corn?
4. Have pictures (or the actual food) of corn-based foods available for the children to see: corn bread, corn on the cob, can of corn, corn fritters, cream corn, popcorn, etc.
5. Ask, *How does the corn from the stalk become these products?*
6. Demonstrate how to turn corn kernels into corn meal: Put a handful of corn kernels on the stumps, cover with a piece of scrap leather, and carefully crush the corn with the rock. Let the children try it.
7. Demonstrate the correct use of the food mill, place a small handful of corn into the mill and turn the handle. Let the children try it.
8. Collect cornmeal and save for a cooking project or to feed chickens.
9. Process and reflect on the experience with the children by engaging in a conversation guided by the discussion questions.



Materials:

- Log stumps (*one per station*)
- child-hand sized rocks (*one per station*)
- leather scraps (*a few per station, sized approximately 3"x4"*)
- Food mill (*See Lehman's at www.lehmans.com*)
- Corn stalks & dried corn on the cob (*often available from holiday décor stores, nurseries, or hardware stores*)
- Dried corn kernels (*available at health stores, you could use popcorn kernel, too*)
- Field corn/feed corn (*available at hardware or feed stores*)
- Water table



Literacy Connections

- *The Popcorn Book* by Tomie dePaola
- *Corn* by Gail Gibbons
- *I Like Corn* by Robin Pickering

Extensions

- Visit an actual corn field to examine the plants growing. If possible, play hide and seek among the stalks!
- Bake corn bread with the ground corn.
- Save some of the corn kernels to plant.
- Visit chickens nearby and feed them the crushed corn.



To make corn meal from raw corn kernels, place a handful of corn in the center of your stump, cover with a scrap piece of leather (so corn bits don't go flying!), and pound with a rock. Lift the leather every so often to check your progress and to brush your corn bits back into a pile for more crushing.

Discussion Questions

- What are some the things that need to happen to have your favorite type of corn on your plate?
- What did we use to crush the corn? Where are these materials found?
- How else do you think people might crush corn to make cornmeal?
- What other animals like to eat corn?

Dress-up a Bean Plant



How are we connected? •
spring



WHAT'S THE Big Idea? Cycles

Enduring Understandings

- All plants produce seeds and have similar parts: roots, stems, leaves, flower, and fruit or vegetables.
- These parts provide special things to help make the plants grow.

Objectives

- Children discover the parts of a plant.
- Children demonstrate the ability to role play plants by dressing up as plants.

Directions

1. Fill your class with various plants, flowers and/or vegetables plants, for the children to observe. On outdoor walks, observe plants around your school — grass, trees, weeds, whatever is growing. Begin the conversation about plants by asking children what they see, feel and/or smell about these plants. What do they notice that is similar about the various plants? What is different? Can they identify some *parts* of a plant?
2. Ask for a volunteer who would like to be turned into a bean plant so your students can add the parts.
3. Building on the students' observations of the plants, ask for suggestions about what this child needs to be turned into a plant? Leaves, stem, roots, might be a few suggestions.
4. Tie string of "roots" around the ankles. Roots stabilize the plant and suck up moisture from the soil.
5. The child's legs will symbolize the plant's stem that moves food and nutrients throughout the plant as it stabilizes the plant.



Materials:

Dress up a volunteer as a bean plant by filling a bag with:

- Straws tied to a string (representing roots)
- Two large green leaves made of cloth or paper
- Large white (or colored) petals cut from cloth or paper and make into a necklace
- Several large green paper string beans
- Bee puppet





Literacy Connections

- ***The Big Yellow Sunflower*** by Frances Barry
- ***Jack's Garden*** by Henry Cole

6. A young plant begins with the first two true leaves which can be represented by two green cloth or paper leaves that can be placed over the child's arms.
7. The volunteer's head makes a perfect stigma, the center of a flower. Complete the flower by placing a necklace of large white or yellow petals (made from cloth or paper) around the child's neck
8. Explain that the flower needs to be pollinated to produce a bean. Have another child fly into the flower with a bee puppet. After pollination, the flower falls off and behold...beans! (Drape the paper beans on the volunteer's arms.)
9. As the bean grows, it develops seeds. These seeds can be eaten or saved to planted next spring!

Discussion Questions

- How do other plants grow?
- Where can you find seeds in other plants?

DRAFT

The Fabulous Five



How are we connected? •
spring

WHAT'S THE Big Idea?

Interdependence
Cycles

Enduring Understandings

- All living things (including the food we eat) have needs.
- We rely on each other and other living things to meet our needs.
- Plants need a balance of sun, water, air, space and soil to grow successfully.
- We need food to live.
- Our food comes from the land.

Objectives

- Children demonstrate problem-solving by following clues in a scavenger hunt.
- Children cultivate an awareness of the five things a plant needs to survive.
- Children show interest and curiosity in what a plant needs to grow.
- Children build awareness of what living things need to survive.

Directions

1. Before the actual lesson, find time to place the clues around your school yard, garden or even classroom. Ideally, the clues would be outside.
2. Show the children a handful of bean seeds. Ask the children: *What do you think bean (and other types of) plants might need to grow and live?* Once they have shared some of their ideas, have “a seed” invite the children to go on a scavenger hunt to discover what it needs to grow into plant! (Read Clue 1.) Tell students that along the way they will be making a bracelet to help them remember what plants need to live.
3. As you visit each station, identify the visual clue that indicates one of the Fab 5: a picture of a sun; water or a spigot; a pinwheel; a bucket of soil; and a picture of plants nicely spaced.
4. At the first station, distribute the pipe cleaners and the first bead. At each of the following stations, help children add a bead to their pipe cleaner. It can be helpful to review what each bead represents each time they add a new one. (black beads = *seed*, yellow beads = *sun*, blue beads = *water*, clear beads = *air*, brown beads = *soil* and green beads = *space the plants need to grow*.)
5. Process and reflect on the experience with the children by engaging in a conversation guided by the discussion questions.

5 Things a Plant Needs to Grow

“The Fab 5”

Sun

Water

Air

Space

Soil



Materials:

- A pipe cleaner for each child
- Baggie with bean seeds
- Clue Card (*see next p.*)

Sun

Station:

- Baggie of yellow beads*
- An image of a sun
- Clue Card (*see next p.*)

Water

Station:

- Baggie of blue beads*
- jar of water, image of spigot
- Clue Card (*see next p.*)

Air

Station:

- Baggie of clear beads*
- A pinwheel
- Clue Card (*see next p.*)

Space

Station:

- Baggie of green beads*
- A picture of plants nicely spaced in a row
- Clue Card (*see next p.*)

Soil

Station:

- Baggie of brown beads*
- bucket (or picture) of soil
- Clue Card (*see next p.*)

*Include enough beads for each child.

Copy and cut-out these Clue Cards and place at the station indicated on each card.

Seeds

Clue 1

In order for me to grow big and strong,
You are going to need to help me along.

Five things I need to stay alive—
We'll call them the **fabulous five!**
The first will surely help me wake,
It's cold in here for goodness sake!
I must warm up and feel the light—
Take me where it's warm and bright.

Sun

Clue 2

I'm much warmer now, thanks a bunch
But I think it's getting time to munch.
I make my own food whenever I'm hungry
But the problem is, I'm really thirsty!

Look around—you need to think,
and find something for plants to drink.

Water

Clue 3

You need me and I need you!
Soon you'll learn a step or two
We eat and drink and need to share,
'Cause both of us must breathe the
_____.

Look around—think and observe.
Can you see where wind is pushing air?

Air

Clue 4

Even though I'm little now
I'll soon be big—somehow.
I'll grow with others (it's not a race)
Just don't plant me too close,
I need my _____.

Look around! You'll see a sign,
showing plants with room, growing fine.

Space

Clue 5

Sun, water, air and space—
all things I need to live
But there's one more, to me, you must give
It's dark and brown, under your feet
Without it my life will be incomplete!
Look around—a bucket and a sign—
complete the Fab Five and your plants will
grow fine!

Soil

The Fab 5!

Sun
Water
Air
Space
Soil

Plant your seeds!

Discussion Questions

- Do you know any other living things that need the same things to live?
- Where does the plant get the Fab 5?
- What do you think would happen if a plant didn't have all of the Fab 5?
- What do people need to live?
- Where do people get the things they need to survive?



Signs for each of the five scavenger hunt stations, showing the "Fab 5" things that plant needs to grow.



Literacy Connections

- **Who Is In the Garden?** by Vera Rosenberry
- **How Groundhog's Garden Grew** by Lynne Cherry
- **The Carrot Seed** by Ruth Krauss
- **Tops and Bottoms** by Janet Stevens
- **The Ugly Vegetables** by Grace Lin

Extensions

- Have children place the life cycle of a bean into the correct order using the Bean Life Cycle cards in Appendix .
- Plant some bean seeds in the garden or a container. Eliminate one of the Fab 5 to see if the plant will still grow.
- Soak lima bean seeds in water for a few hours, have children dissect a bean to discover the tiny bean plant asleep inside. Try this with other types of seeds and compare your findings.
- Save some dried bean plants and beans from the garden, have children remove the bean pods and shuck the bean seeds out of the pods. Compare the seeds, what can you do with these beans? Eat them, plant them, use them in a seed mosaic.

DRAFT



DRAFT

Seed Scavenger Hunt



How are we connected? • fall

WHAT'S THE Big Idea?

Interdependence Cycles

Enduring Understandings

- All plants, wild and domestic, go through life cycles.
- Most plants reproduce through seeds.
- Not all seeds look alike; seeds are specific to the plant from which they came.
- Seeds have similar qualities: seed coat, embryo, food storage.

Objectives

- Children cultivate an understanding that most plant life begins (and ends) with seeds.
- Children show interest and curiosity in discovering seeds.

Directions

- Read books about seeds to children. Use the discussion questions to process the reading and gather information.
- Walk around the school yard, farm, or forest, looking for seeds: acorns, dandelions, and/or maple seeds. Use the egg cartons or yogurt cups to hold the seeds.
- Visit a school or neighborhood garden to collect seeds from vegetables gone by.
- Set up a seed collection area in the classroom where children can sort and classify the seeds. Have them share their display and the others can guess how they were sorted. By color? Shape? Size?
- As the seed discovery and exploration continues, keep returning to the discussion questions. Ask the children what other questions they have about seeds.

Discussion Questions

- Where can we find seeds?
- Do all seeds look the same? How are they alike? How are they different?
- What is the purpose of seeds?
- How do seeds travel?



Materials

- Empty egg cartons
- Magnifiers/magnifying boxes
- Empty yogurt cups





Literacy Connections

- **How A Seed Grows** by Helene Jordan and Loretta Krupinski
- **The Dandelion Seed** by Joseph Anthony
- **The Pumpkin Circle: A Story of a Garden** by George Levenson
- **A Seed is Sleepy** by Dianna Hutts Aston
- **The Wind's Garden** by Bethany Roberts

Extensions

- Maple tree life cycle cards (see Appendices, p.)
- Wear old, large, wool socks over your shoes and examine the seeds that your socks pick up.
- Create a take-home Seed Scavenger sheet
- Plant some of the seeds, watch what happens!
- Use seeds as counters (see photo!)



DRAFT

Wonderful Wheat



How are we connected? • fall



WHAT'S THE Big Idea?

Interdependence Cycles

Enduring Understandings

- We need food to live.
- We rely on each other and other living things to meet our needs.
- Knowing where our food and fibers come from is important to understanding the relationship between humans and the natural world.

Objectives

- Children cultivate an understanding of where their food originates.
- Children show interest and curiosity in processing raw food into finished food products.
 - Children engage in processing food by demonstrating the use of simple machines to grind wheat.

Directions

1. Lay a sheet or drop cloth on the floor and place the wheat stalks on it. Examine the plants with the children. Challenge them to point out the stalk or stem, leaves, and the wheat head. Have them notice that the stem is hollow. This is called straw and farmers will save the straw for bedding



Materials

- Hand operated grain mill *Available at Lehman's, 877-438-5346, www.lehmans.com*
- Wheat berries *Available at many grocery stores or natural food stores in the bulk section*
- Wheat stalks *Obtain some from a local farmer or plant your own to harvest (see Extensions, next page). Sometimes wheat stalks may be found at craft or home décor stores*
- Flour sifters (typically used in baking)
- Sheet or drop cloth



Literacy Connections:

- **Bread Comes to Life: A Garden of Wheat and a Loaf to Eat** by George Levenson
- **Sun Bread** by Elisa Kleven
- **Bread Is For Eating** by David Gershator, Phillis Gershator, and Emma Shaw-Smith
- **BREAD BREAD BREAD** by Anna Morris
- **Good Bread: A Book of Thanks** by Brigitte Weninger





wheat berries

Extensions:

- Gluten free options: Grind rice or other grains in the mill to make gluten free flour.
- Early wheat farmers would chew a handful of wheat berries as the first chewing gum.
- Grow your own wheat! According to Organic Consumer Association, a 10'x10' plot of fertile land can harvest enough wheat berries for 10-25 loaves of bread. They recommend planting a red wheat seed (you can buy wheat berries at a health food store) in late September or early October. This wheat is more nutritious than spring wheat, protects the soil in the winter, and has less competition from weeds. The wheat may start to grow, be buried by snow, and come up again in the spring. Harvest in late June when the wheat begins to turn golden but still has a few streaks of green. Tie wheat into bundles, stand them upright, and allow the grain to fully ripen into a golden color. (OCA, May 28, 2009)
- LINKS to other recipes in the book that use flour

in their animals' stalls. Is this where the first drinking straw idea came from?

2. Invite the children to break the wheat head off and hold it in their hands. Use both hands to roll the head between their hands to loosen the wheat berries from the chaff. Let all pieces fall to the sheet and have children pick up the loose wheat berries. All the other plant material that is left over is called the chaff.

3. Ask the children to try to crush a berry between their fingers. Can they do it? It's a hard berry — not like a blueberry or strawberry. Invite the children to eat a few of the berries, crushing them between their molars. *What do they taste like?*

4. After exploring the wheat berries, demonstrate how to grind them in a grain mill using some of the wheat berries the children have harvested. Together with the children, look at the new product you have created: flour! *What are some things we use flour for?*
5. Using the bulk wheat berries to supplement your supply, let the children grind them into flour. Save the flour for use at a later time for baking or for making play dough. You can let the children help decide what to make with their flour at a later time.
6. Process and reflect on the experience with the children by engaging in a conversation guided by the discussion questions.

Discussion Questions

- What is wheat?
- Where does wheat come from?
- How can we use wheat for food?
- What types of foods are made from wheat?
- How can we harvest the wheat berries to grind into flour?
- How can we use the flour we make?