

IN A GIANT'S GARDEN

ITV SERIES

READING RAINBOW: #1005:

June 29, 1999

GRADES K-3

PREVIEWING ACTIVITIES

Invite the students to the gathering/whole group area of the classroom.

Begin the lesson by saying, "I see from the information on the calendar wall, that it's spring. I think that means it's time to start preparing for October and Halloween. Why do you think we need to think about Halloween in the spring? What can you observe in the room that would allow you to hypothesize today's lesson and getting ready for Halloween? What clues do you see that might help you with your guess?" Display a basket/container filled with packets of seeds, a Jiffy Pot; small containers filled with soil, sand, and compost.

Acknowledge the students predications.

"What type of seeds do you think these might be?"

"Yes, you are correct. These are pumpkin seeds. How do you know that these are pumpkin seeds? What do we need to do with pumpkin seeds?"

"Yes, you plant them. Why do you think we need to plant them now? Why can't we wait until after school is out for the summer? Let's look at the package of seeds and see if we might find an answer to our question." Allow the students time to examine the seed packs. Draw their attention to the back of the package. (An enlargement or overhead transparency could be used at this point.) Discuss the information found on the back of the seed packet.

"Yes, pumpkins take a very long time to grow, the packages say that they will take about 120 days to grow. How many months make 120 days?" Using the calendar count ahead 120 days. Point out that 120 days will be after summer vacation and the beginning of a new school year. Ask the students, "What do you think we need to do first?"

"Right, we have to plant the seeds. What do you think we need in order to plant the seeds? What do you see in the basket that we might use?"

"Yes, you see a pot, seeds and soil."

"What do seeds need to grow in addition to a pot, seeds and soil? Let's make a list of what we need. I have a sentence

OVERVIEW

In this lesson the students will discover the life cycle of Cucurbita pepo, the pumpkin plant. This lesson focuses on the plant rather than the pumpkin. The students will prepare soil and plant seeds. They will build and observe the environment of a hot house. They will compare, contrast and define the differences between male and female blossoms.

In this lesson the students will explore the effect of the rotation of the Earth in relationship to its position to the sun and the effect that lengthening or shortening days have on the pumpkin plant. Students will explore simple weights and measures using scales, rulers, and simple weights.



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LEARNING OBJECTIVES

Students should be able to:

- List the needs of plants.
- Define math vocabulary words: axis, circumference.
- Define science vocabulary words: decompose, orbit, stamen, stigma, pollen, pollination.
- Demonstrate the lengthening/shortening of days as the earth rotates the sun.
- Describe the life cycle of the pumpkin plant.
- Estimate weights using simple non-standard weights.
- Mix a potting mix using a 1-1-3 mixture.
- Construct a simple hot house/greenhouse.
- Estimate growth rates using simple measures.
- Identify the male and female blossoms.

PREVIEWING ACTIVITIES (continued)

strip to label our list, who would like to read it for us?" Display a sentence strip labeled, "THINGS A PUMPKIN SEED NEEDS TO GROW." Select a student to read the seed package label. Write the children's responses on sentence strip cards. Guide their answers as needed to provide the following key information:

- Pumpkins need soil.
- Pumpkins need water.
- Pumpkins need warmth.
- Pumpkins need sunlight.

FOCUS FOR VIEWING

The focus for viewing is to give students a specific responsibility while viewing the video segment to focus and actively engage the student's viewing attention. Focus for viewing provides an introduction to the tape segment by asking a question. The students may be asked to listen for specific information or participate in an activity that will make the program's content clearer or more meaningful.

Explain to the students that the video segment will allow them to learn about growing a very special type of pumpkin, the Atlantic Giant. Tell the students that the man in the video is Mr. Howard Joe, and that he will help them learn about planting and raising giant pumpkins. "Please listen and watch for where Mr. Joe lives."

VIEWING ACTIVITIES

BEGIN THE VIDEO at the point just after the reading of the feature book. LeVar Burton says, "Now giant fruits and vegetables don't come from outer space. People work very hard to make them grow."

PAUSE THE VIDEO after Mr. Joe says, "I'm Howard Joe, from Windsor, Nova Scotia, where I've grown some of the world's largest pumpkins." Ask the students to find Nova Scotia on the map. "Why do you think that this location might be important in the growing of giant pumpkins?" Show the students Nova Scotia on a globe. Explain that as the Earth moves in its orbit around the sun, it moves on its axis. As the planet moves closer or farther from the sun, the amount of light and the length of the day increases or decreases.

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VIEWING ACTIVITIES (continued)

Length of Day/Amount Activity:

Ask the students to find the ball and the flashlight in their supplies. Direct the students to place a rubber band around the circumference of the ball. Explain that this is the equator.

Ask the students to hold the ball so that the beam of the flashlight is level with the equator; then ask the students to slowly rotate the ball until most of the light is focused on the upper portion of the ball. "Do you remember the list we made of things plants need in order to grow? What was one for the four things that all plants need?"

"Yes, light. Why would getting a lot of light help pumpkins to grow so big?"

"You're right. Lots of light lets the plant grow a lot."

REFOCUS the students' attention to the video by asking them to watch and listen for just how big the pumpkins can grow. **RESUME THE VIDEO.**

PAUSE THE VIDEO as Mr. Jones says, "You know what? That's a pretty big pumpkin."

Ask the students to recall how big the pumpkins can grow. Regular pumpkins grow to be 15 to 20 pounds, but the Atlantic Giants can grow to be 800 pounds. Ask the students, "How much is a pound?" Provide simple home-made one pound weights. Ask the students, "How many bags would be needed to weigh the same as a 20 pound pumpkin?" With the students help, count out 20 one pound bags and place in a plastic grocery bag. Allow each student to lift the bag. Say to the students, "If we used 20 weights for a "regular" pumpkin, how many would we need for a pumpkin that weighted 800 pounds?"

"Right, 800 weights, that's more than we have. How do you think we could find out how much 800 pounds weighs?" Acknowledge the students responses.

Weight Activity:

Ask the students how much they think they weigh. Ask how they could find out. Provide a bathroom scale, with a LCD display, ask the students to weigh themselves and record their weights on a Post-It Note. Using an overhead projector, record each child's weight on a transparency. Add up the combined

MATERIALS

Previewing and Viewing Activity:

Per class:

- Overhead transparencies
- vis-à-vis pens
- A 12 month calendar
- Sentence strips
- Pocket chart
- Wide permanent marker
- 1 package of Giant Atlantic or Mammoth pumpkin seeds, or a package of seeds saved from pumpkin math in the fall.
- basket/container for seeds
- Jiffy Pots (small container filled with soil, sand and compost)
- plant markers

Length of Day/Amount Activity:

Per class:

- 1 map, either the world or North American
- 1 globe
- 1 play ground ball 6 to 8 inches
- 1 flashlight
- 1 large rubber band



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MATERIALS (continued)**Weight Activity:**

Per Class:

- 1 overhead calculator
- Post-It Notes, 1 per student
- 20 to 30 1 pound home-made weights (Weights are made by measuring 1 pound of either rice or rock salt into a sandwich sized zip lock bag. Fold over the sealed top and tape with wide plastic tape.)
- 1 plastic grocery bag
- 1 bathroom scales with LCD display

Planting Seeds Activity:

Per Student:

- clear plastic 2-liter soda pop bottles for constructing mini-hot houses, 2 bottles per student (Cut the tops off the bottles, the bottom section should measure 5 inches, the top section should measure 8 inches.) Using a sharp object, poke 3 or 4 holes in the bottom.
- magnifying glass/lens.

Per Group:

- a packet of pumpkin seeds, Giant Atlantic, or Mammoth
- containers of sifted soil, sand, and compost, 1 container of each

VIEWING ACTIVITIES (continued)

weights with the overhead calculator. Count how many students would be needed to weight 800 pounds.

REFOCUS the students' attention to the video by saying to them, "In the next segment of the video, Mr. Joe will be planting the pumpkin seeds. Please watch for the sequence of events that we will need to do in order to plant our own seeds. **RESUME THE VIDEO.**

PAUSE THE VIDEO after Mr. Joe says, "This gives the plant all the vitamins they need."

Planting Seeds Activity:

Ask the students what manure or fertilizer is. Direct their attention to the three containers of matter. Tell them that one is filled with "compost." Explain that compost is a mixture of decomposing (rotting) vegetable refuse, and manure used for fertilizing and conditioning the soil. Ask the students to use the hand lens to help them find the compost. Allow the students a few minutes to explore the containers. Ask, "Which container is filled with compost? How did you know?"

"Yes, you can see the plant matter in the compost, and the compost is much darker in color than the soil or the sand. Do you recall the soil in the Jiffy Pots Mr. Joe had prepared for the seeds? We are going to mix our own soil mixture for our seeds. Measure one scoop of dirt, one scoop of sand and three scoops of compost into your mess pot. Mix it thoroughly. Now fill your Jiffy Pot with the soil mixture." At this point explain to the students that the Jiffy Pots are made from a type of material similar to compost. The pots compost or decompose after they are planted in the ground.

Ask the students to open their packet of seeds. Direct each student to pick two seeds and plant them point down in their pot. Ask them to write their name on a plant marker. On the other side of the marker ask them to write: GAP and the date. "Do you remember the special blue powder that Mr. Joe mixed with water to give his pumpkin plants vitamins? Find the small packet of powder in your work basket." Direct each group to measure 2 cups of water and mix in the powder. Stir it very well. Direct each student to measure 1/3 cup and water the seeds.

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VIEWING ACTIVITIES (continued)

REFOCUS the students' attention to the video by telling the students that Mr. Joe will teach how to plant the plants outside in the next segment of the video. **RESUME THE VIDEO.**

PAUSE THE VIDEO at the point in the segment where three mini-greenhouses are lined up in a row. Ask the students, "What things did Mr. Joe say that the mini-greenhouse did?"

Acknowledge the students responses. Explain that a hot house protects the transplanted seedling from the damp cold, and that they raise the soil and environmental temperatures for the seedlings. Direct the students to take two of the pre-cut 2-liter soda bottles, 1 bottom, 1 top. Direct the students to place their planted Jiffy Pot in the bottom section of the mini-hot house. Cover the pot with the taller bottle. (The students may need assistance pushing the two parts together.) Label the hot houses with the students names. Ask the students what they think will happen. Direct the students to place their greenhouse on the window ledge. Tell them that they will be observing the greenhouses as the plants grow.

REFOCUS the students' attention to the video by asking them to watch and listen for information about how fast a pumpkin plant can grow. **RESUME THE VIDEO.**

PAUSE THE VIDEO when Mr. Joe says, "During the mid-part of the growing season, I remove the hot houses from the plants."

Measurement Activity:

Ask the students how much a plant or vine can grow in a day. Mr. Joe said that they can grow 6 to 8 inches. Ask the students to find the colored string, the ruler and scissors. Direct each of the students to cut off 6 inches of string. Ask the students if children grow that fast during just one day.

Direct the students to tape their string sections to a long strip of paper. Ask them how many days growth is represented on the strip. Combine all the groups' strips, again ask how many days' growth is represented.

REFOCUS the students' attention to the video by giving them the responsibility to watch for information about the flowers called blossoms. **RESUME THE VIDEO.**

MATERIALS (continued)

- 1 teaspoon Miracle Grow plant food (blue powder)
- water
- 1 cup measuring cup
- Mess pots (# 10 cans or recycled plastic tubs).
- Newspapers

Measurement Activity:

Per group:

- scissors, 1 pair
- ruler
- small roll of colored string
- 1 roll of tape
- 1 roll of calculator paper

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MATERIALS (continued)

Post Viewing Activity:

Per group:

- 1 packet of giant sunflower seeds
- 1 mess pot of water

Per student:

- 1 compressed peat pellet
- 1 8 or 9 ounce plastic cup
- 1 craft stick

VIEWING ACTIVITIES (continued)

PAUSE THE VIDEO where Mr. Joe says, "Of course the bees help too."

Ask the students what they learned about the flowers. They should answer that there are two kinds, male and female. Explain that the male flower has a long thin stem. The male flower has a stamen and produces tiny yellow grains called pollen. The female flower has a short fat stem, and the flower grows atop a green bulbous knob. This knob will become the pumpkin when pollen from the male plant is brushed on the stigma of the female flower. This is called pollination.

REWIND THE VIDEO to the last pause point, "During the growing season, I remove the hot houses from the plants." The purpose for rewinding and replaying this segment is that the concept of male and female flowers and pollination is difficult for students ages 5 to 8 years to understand. This concept is usually introduced in the upper grades. **RESUME THE VIDEO.**

PAUSE the video at the female blossom atop a green bulbous knob. Discuss that this is the female flower. Explain that inside this knob are eggs that when combined with the pollen become pumpkin seeds. Each egg needs a grain of pollen to become a seed. Only eggs that receive pollen become seeds. **RESUME THE VIDEO.**

PAUSE THE VIDEO where Mr. Joe is hand pollinating the female flower. Point out the stamen, and the stigma. **RESUME THE VIDEO.**

PAUSE THE VIDEO when Mr. Joe says, "And that's a lot of pumpkin pie."

REWIND THE SEGMENT TO THE BEGINNING.

REPLAY THE VIDEO so that the students can view the whole segment without pauses.

POST VIEWING ACTIVITIES

"Today you have mixed a potting soil, filled a Jiffy Pot, planted a seed, and built a greenhouse. Look at your greenhouses. I see water/moisture on the inside of the greenhouse. Where did it come from?"

Acknowledge the students responses. "The Atlantic Giant Pumpkins grow to be very large. Can you think of another

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POST VIEWING ACTIVITIES (continued)

“giant” plant that you might find in a giant garden?”

Acknowledge the students responses. “Today we are going to plant another giant plant in the garden. Find the little flat round discs in your work box. In the bag with the discs, you will also find a packet of seeds. What plant is pictured on the front?”

“Sunflowers, you’re right. How can you plant sunflower seeds in the disk? It looks very small and it’s very hard. I think it would be difficult to plant anything in it. I know that it has all the same materials in it that we put in the Jiffy Pots for the pumpkin seeds. Who can think of what we need to do to prepare to plant our sunflower seeds?”

Acknowledge the students responses. “Yes, plants need water. Let’s see what happens if we put the discs in water.” Direct the students to drop their disk into a mess pot of water. The pot will absorb the water and expand. Ask the students, “What happened to the flat little disks?” Acknowledge the students’ responses. Direct them to open the sunflower packets, divide the seeds equally, poke a finger hole in the top of the “pot” and plant their seeds. Ask the students to write a label for the pot with their name on one side and SF and the date on the other. Give the students a small cup to place their pot in and direct them to place them in the window with their pumpkin seeds.

ACTION PLAN

Make arrangements to till a garden spot in a sunny corner of the school yard, or ask for donations to build several raised beds.

With the help of a Master Gardener or Cooperative Extension Agent, till, fertilize/ compost, and transplant several of the pumpkins and sunflowers started in the classroom. Plant other giant vegetables in the bed. Tend over the summer, and harvest your crop in the fall.

Visit a local greenhouse, garden center, or pumpkin patch. Help plant the patch. Tour the greenhouse. What other plants have to be started early in order to be ready for the summer? What kinds of seeds, bulbs and plants are available at the greenhouse?

Construct a compost bin. Search the public library, or use the Internet to find directions on construction and keeping the pile working. Add the compost to the students’ garden.

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EXTENSIONS

Conduct a search of the Internet for information about pumpkins. Here are three sights listed in October and November, 1997:

"Bruce's Atlantic Giant Pumpkin Diary" <http://www.magma.ca/~ibk/>

"Howard Dill's Pumpkin Guide" http://www.business.com/neat_things/dills_pumpkins/

"Ottawa-St. Lawrence Pumpkin Growers" <http://www.magicom/~farmrgus/>

Language Arts: Write to the International Pumpkin Association, Inc. for an information sheet about growing and cooking pumpkins. The address is:

The International Pumpkin Association, Inc.
2155 Union Street
San Francisco, California 94123
(phone: 1-415-346-4446)

Literature-Listening Center: Place a collection of cassette tapes, books, and magazines about pumpkins and growing plants and vegetables in the center. A few suggestions are:

June 29, 1999 by David Wiesner. Published by Clarion Books. (An audio cassette of this book is available)

Growing Vegetable Soup by Lois Ehlert. Published by Harcourt Brace. (An audio cassette of this book is available.)

CLASSROOM COOKING

The long, slender stemmed male blossoms can be used for cooking. Prepare the blossoms by removing and discarding the stamens. Wash thoroughly, drain on a towel, and pat dry. Here are two simple recipes to try with your students. (Remember, cooking in the classroom brings the use of fractions and measurement into real life.)

Blossoms and Cream Cheese

Serving size: 3 to 4 blossoms per person, serves 3 to 4.

1 8 ounce package of low-fat cream cheese/or low-fat yogurt cream cheese

1/3 cup finely sliced green onions, include some of the green top

Salt and pepper to taste (pepper should be freshly ground and rather course)

1 tablespoon finely sliced chives (fresh if possible)

1 chile, Fresno or Jalapeno, optional (roasted, with skin and seeds discarded)

Cooking spray

12-14 pumpkin blossoms (squash may be substituted)

Mix cheese, onions, chile, and seasonings. Divide the filling equally between the blossoms. Stuff the blossoms. Place in a pan sprayed with cooking spray.

Heat thoroughly in a 300° oven, about 15 to 20 minutes.

Pumpkin Blossom Tempura

Serving size: 3 to 4 blossoms per person, serves 3 to 4

1/3 to 1 cup sifted all-purpose flour

salt and freshly ground pepper to taste

2 eggs, beaten and diluted with

1/3 cup milk

1/3 to 1 cup finely ground dry bread crumbs

oil for frying

12 to 14 pumpkin blossoms

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CLASSROOM COOKING (continued)

Combine flour, salt, and pepper. In a separate bowl, mix eggs and milk.

Dredge the pumpkin blossoms in seasoned flour. Dip into the egg wash and then into the bread crumbs. Spread the blossoms on cookie sheets and chill thoroughly. At serving time, fry pumpkin blossoms in hot oil until browned. Drain briefly on paper toweling and serve immediately.

If you are unable to find seeds for the Giant Atlantic or Mammoth pumpkin, seeds from these varieties may be substituted, Big Max, Big Tom, Cheyenne, Cinderella, Cushaw, Funny Face, Jack-O-Lantern, Lady Godiva (naked seed), Midget, Sugar, Jack-Be-Little, Small Sugar or Baby Bear. If pumpkin seeds are not available locally the following mail order companies can supply seed:

Burgess Seed and Plant Company,
P.O. Box Box 3000
Galesburg, Michigan 49053

Atlee Burpee Company
PO 748, 6350 Rutland Ave
Riverside, California 92502

Gurney Seed and Nursery Company
1448 Page Street
Yankton, South Dakota 57078

If the students are young, Kindergartners or 1st graders, an educational aide or a parent volunteer to help each group would be helpful.

EXTENSIONS (continued)

From Seed To Jack-O-Lantern by Hannah Lyons Johnson. Published by Lothrop, Lee, and Shepard Company

It's Pumpkin Time! by Zoe Hall. Published by Scholastic Inc. (An audio cassette of this book is available.)

Pumpkin, Pumpkin by Jeanne Titherington. Published by Greenwillow Books. (An audio cassette of this book is available.)

VIDEO AVAILABLE FROM:

Can be taped off-air. Consult your local PBS station for broadcast schedule.

This tape is available on loan from the Idaho State Video Library.

This tape may be purchased from:

GPN
PO Box 80669
Lincoln, NE 68501-0669
Fax: (402) 472-4076.
Phone: 800-228-4630.

Lesson plan developed by Master Teacher Penny Jean Morrison, Bliss School, Bliss, Idaho.



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