

The Pumpkin Patch

An Integrated Thematic Unit



Developed for Alabama Agriculture in the Classroom

December 2000

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Seeds of Discovery

What's large, orange, and filled with seeds? Even the youngest of elementary-age students can answer this riddle with ease. Take a pumpkin to school with you and create an atmosphere of fun and excitement with the activities included in this unit. Each activity featured can be used by itself or as part of a week-long festival in honor of October's most famous fruit.

The specific activities are designed to be used by the elementary teacher and require readily available, inexpensive materials. There's a lot of mileage in one modestly priced pumpkin. So plant the seeds of discovery and watch as learning takes over in your classroom.

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How Pumpkins Grow



Pumpkins belong to a family of plants called cucurbits. Other members of the family are squash, gourds, melons, and cucumbers. These grow in fields on long vines that cover the ground. Pumpkins come in a variety of colors, from white to yellow to orange, and range in size from less than a pound to more than 1,000 pounds. They trace their origins to Central America. The name *pumpkin* comes from the Greek word *pepon* meaning “large melon.”

Pumpkin seeds are planted in May and June, depending on the temperature of the soil. The seeds, dependent upon warmth and moisture, generally germinate in 7-10 days. As the leaves and vines develop above the ground, an extensive root network is developing in the top twelve inches of soil. These shallow roots are noticeable as offshoots of the vine along its entire length and are used to gather most of the food, moisture, and air that the developing plant needs. The pumpkin plant develops a strong tap root that grows as deep as 2-3 feet. Tendrils that form along the length of the vine help to support the plant.

Yellow blossoms begin to appear after several weeks of growth. The vine develops both male and female flowers. Female blossoms are easily distinguished from the male by the presence of a small, rounded shape at the base of the flower. Bees spread pollen from the male to the female flowers. After pollination, the fruit at the base of the female blossom begins to develop into a full-sized pumpkin. At this stage of development, the pumpkins require a steady supply of moisture and sunlight. It takes approximately 90-120 days for the pumpkin to fully develop after the seed has been planted.

Growing Pumpkins in the Classroom

What's Inside That Seed?

Objective: Students will observe the embryo of a seed.

You'll need: Pumpkin seeds (enough so that each student has one), water, shallow dish, hand magnifiers

Procedure:

1. Discuss with students the conditions needed for seed germination: moisture, temperature. Is soil a requirement? Why or why not?
2. Explain the role and importance of the plant embryo.
3. Place a moistened paper towel in a shallow dish. Cover with pumpkin seeds. Cover with another paper towel and a small amount of water.

The next day:

4. Direct student to examine the damp seeds with magnifiers, observing the embryo. Have students illustrate, label, and write about their findings.

Ziplock Success!

Objective: Students will observe germination of pumpkin seeds.

You'll need: Seeds (clean and dry), ziplock bags, potting soil, permanent marker

Procedure:

1. Have each student label his/her bag with a permanent marker. They should include the variety of pumpkin planted and the date.
2. Place a small amount of potting soil in each bag and add several seeds.
3. Add a small amount of water and zip the bag closed.
4. Hang bags up in the classroom and observe. They should require no further care.
5. Record changes noted over the next week. Send the young plants home to be transplanted.

NOTE: This can also be done by substituting a moistened paper towel for the potting soil.

More Growing Ideas. . .



A Handful of Seeds

Objective: Students will compare and contrast the rates of germination of different varieties of pumpkins.

You'll need: Pumpkin seeds (try to find 5 varieties, or use other seeds related to pumpkins, such as gourds, squash, cucumber), clear, plastic or latex gloves, cotton balls, water, wide masking tape, fine-point permanent marker.

Procedure:

1. Label each finger of the glove with the date and variety of seed that it will hold. Example: Jack-Be-Little 3/12/01
2. Place a moistened cotton ball in the tip of each finger of the glove.
3. Place a seed on the moistened cotton ball.
4. Seal the glove at the wrist with wide masking tape or duct tape.
5. Place in a well-lighted spot out of direct sunlight.
6. Observe. Illustrate and write about changes that are noticed.

Think about it: Does the largest seed germinate first?



An Easy Pumpkin Patch

Objective: Students will observe the stages of plant development.

You'll need: 1-10 lb. bag of potting soil, a shallow plastic tub, scissors, pumpkin seeds, water, plant light or sunny window sill

Procedure:

1. Place the unopened bag of potting soil in the shallow plastic tub (it should lie flat).
2. Using scissors, cut a large X diagonally across the bag, from corner to corner. Fold the extra plastic back.
3. Plant the pumpkin seeds in the soil about $\frac{1}{4}$ inch deep. Water lightly and place in a well-lighted spot.
4. Keep the soil moist but not overly wet and watch for signs of growth.
5. Have students illustrate and write about the changes they notice.

Pumpkin Math

Pumpkins are a natural for hands-on math. The following suggestions make use of a class pumpkin in teaching about estimation, graphing, place value, and measurement.

How Many Seeds?

Objective: Students will estimate the number of seeds in a pumpkin.
Students will explore place value concepts by counting pumpkin seeds.

You'll need: Chart paper, marker, pumpkin, index cards, white glue

Procedure:

1. Ask students how many seeds they think a pumpkin contains. Record all their estimates on chart paper.
2. Open the pumpkin, remove the seeds, clean and dry them.
3. Glue ten pumpkin seeds on each index card.
4. When approximately half the seeds have been grouped and counted, allow the students to revise their original estimates.
5. Continue gluing pumpkin seeds ten to a card. Tape or staple ten cards together to create a group of one hundred.
6. Compare the final count with the estimates.

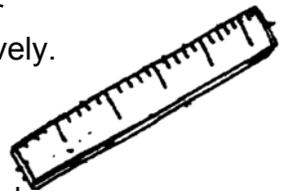
Your Pumpkin and Circumference

Objective: Students will estimate and graph the circumference of a pumpkin.

You'll need: A pumpkin, twine or string, scissors, three construction paper pumpkins, labeled "too long," "too short," and "about right," respectively.

Procedure:

1. Discuss the meaning of circumference and give examples using items found in the classroom (globe, kickball).
2. Tell students they are going to estimate the circumference of the class pumpkin. Tape the three construction paper pumpkins to the board.
3. Pass around a spool of twine or string and direct each student to cut off a length that they think will fit around the widest part of the pumpkin.
4. After all students have cut a length of string, allow them to take turns checking their estimates by fitting their strings around the pumpkin.
5. Direct students to tape their strings on the appropriate pumpkin (too long, too short, about right).
6. Ask students: How many strings were too long? too short? about right?





Create a Pumpkin Graph

Objective: Students will create a seasonal graph.

Students will be able to interpret information from a graph.

You'll need: Posterboard or chart paper. 3 in. x 3 in. orange construction paper squares, pencils, black crayons, scissors, glue

Procedure:

1. Give orange squares to students and have them draw pumpkins that fill the squares.

(Younger students: Teachers may want to trace pumpkin shapes on the orange squares before giving them out to students.)

2. Have students use black crayons to create their favorite jack-o-lantern faces (happy, sad, scary, etc.). Then cut out the pumpkins.

While the students are working on their jack-o-lanterns:

3. Use a black marker to write the date and *Our Favorite Pumpkin Faces* on the long side of the posterboard.
4. Write *scary, happy, sad*, etc. categories on the short side.

After students have completed their jack-o-lanterns:

5. Ask students to glue their completed jack-o-lanterns in the appropriate category.
6. Display the completed graph.
7. Ask students the following questions.
 - a. How many students chose scary faces? happy faces? sad faces? something else?
 - b. How many more chose scary than sad?
 - c. How many scary and happy faces were chosen all together?

NOTE: Be sure to include at least one question that cannot be solved by looking at the graph. For example: "How many children like to decorate pumpkins?"

Other graphing ideas:

1. Use the Internet to research the size of giant pumpkins. Create a bar graph showing the weight of the ten largest on record.
2. If several classrooms in the school have pumpkins, assign upper-grade students the task of recording and graphing vital statistics: circumference, weight, # of seeds, # of creases or ribs, etc.
NOTE: a bar graph can be used to show the relationship between size and number of seeds or creases.
3. Create a graph of favorite ways to eat pumpkin.

Problem Solving with Pumpkins

Read and solve the following problems. Check your answers with the ones provided on the answer key.

1. Sarah and John planted pumpkins in their garden last summer. In October they picked 11 orange Giant pumpkins, 34 Jack-Be-Little pumpkins, and 18 White Casper pumpkins. How many pumpkins did they pick all together?
2. David harvested 68 pumpkins from his pumpkin patch. Jim picked 36. How many more did David pick than Jim?
3. Mrs. Jones bought a pumpkin for her classroom at the Farmers' Market for \$5.25. She paid for it with a ten-dollar bill. How much change did she receive?
4. Jamie's pumpkin weighs 24 lbs. and Jenny's weighs 18 lbs. How much do they weigh all together? How much more does Jamie's weigh than Jenny's?
5. Mr. Alison took 98 pumpkins to the market in October. Fifty-nine of the pumpkins weighed at least 10 lbs. The rest were miniature pumpkins. How many mini-pumpkins did he take to the market?
6. Brown's Pumpkin Patch harvested 176 pumpkins in October and 128 in November. How many did they pick in all? How many more did they pick in October than November?
7. Mrs. Brown gave the fourth grade 45 pumpkins to sell so that they could raise money for a class trip. If they sold them at \$5 each, how much money did they earn?
8. The fifth graders want to decorate the cafeteria for the Fall Festival. They would like to put 3 pumpkins on each of 15 tables. How many pumpkins do they need? If they have to pay \$2 for each pumpkin, how much will it cost? If they sell the pumpkins for \$4 each, how much profit will they make?

Answer Key: 1.) 63 pumpkins; 2.) 32 more; 3.) \$4.75; 4.) 42 lbs, 6 lbs more; 5.) 39 mini-pumpkins; 6.) 304 in all, 48 more; 7.) \$225 earned; 8.) 45, \$90, \$90 profit

Interesting Investigations

Here are some intriguing questions that will get your students involved in the learning process. They can be used as part of a group exercise with younger students or with older students working in cooperative groups.

Think about the creases that run from the stem to the bottom of the pumpkin.

1. Are the creases the same distance apart at the top, bottom, and middle of the pumpkin? If not, where are they closer together? Farther apart?
2. Measure the distance between the creases at the middle of the pumpkin. Are all the creases the same distance apart?
3. Compare several different sized pumpkins. Do larger pumpkins have more creases? Do they have creases that are further apart or closer together?
4. Where on the pumpkin are the creases the shallowest? The deepest?
5. Is the crease visible on the inside of the pumpkin?

Speaking of Seeds . . .

6. Is there a relationship between the size of a pumpkin and the size of its seeds? If so, what is it?
7. Do bigger pumpkins have more seeds than smaller ones?
8. Are all of the seeds from the same pumpkin the same size? If not, where are the seeds the largest? The smallest?

Other thoughts. . .

9. Do pumpkins sink or float when placed in water? Why or why not?
10. If pumpkins float in water, do they float stem side up? Stem side down? On their sides?
11. If you tap on pumpkins of different sizes, do they all make the same sound? If not, how are the sounds different?
12. Can you make different sounds by tapping on different parts of the pumpkin? If so, why do you think this happens?

Pumpkin Poetry and Songs

Pumpkin, Pumpkin

Pumpkin, pumpkin
Sitting on the wall.
Pumpkin, pumpkin,
Tip and fall.
Pumpkin, pumpkin,
Rolling down the street.
Pumpkin, pumpkin,
Good to eat!



Jack-O-Lantern

There is a little pumpkin
Orange and round.
Down in the garden
Laying on the ground.
But on Halloween night
You will see,
A glowing jack-o-lantern
Scary as can be!

Five Little Pumpkins

There were five little pumpkins
Sitting on a gate.
The first one said,
"Oh, my it's getting late!"
The second one said,
"There are witches in the air!"
The third one said,
"I don't care!"
The fourth one said,
"Let's run, run, run!"
The fifth one said,
"I'm in the mood for fun!"
Then crash went the thunder
And out went the lights
And the five little pumpkins
Rolled out of sight.

Pumpkin Song

(tune: I'm a Little Teapot)

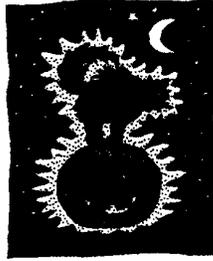
I'm a little pumpkin
Orange and round.
Here is my stem,
There is the ground.
When I get all cut up,
Don't you shout!
Just open me up
And scoop me out!

Mr. Pumpkin

(tune: Where is Thumbkin)

Mr. Pumpkin
Mr. Pumpkin
Round and fat.
Round and fat.
Harvest time is coming.
Harvest time is coming.
Yum, yum, yum.
That is that!

The Pumpkins' Halloween



Five lonely pumpkins on a cloudy night,

- (1) Made a spectacular ghostly sight.
- (2) One of them hopped around on his toes,
- (3) Another one fell and skinned his nose.
- (4) A third one stretched up high in the air,
- (5) And the fourth one danced like a big, brown bear.

The last one made up a scary song,

- (6) So the five lonely pumpkins sang it all night long.

The following gestures may be used to accompany the poem as it is read or as the students say it aloud. Numbers match the line of the poem as shown above.

1. *Students make scary faces.*
2. *Point to one student who hops around.*
3. *Point to one student who rubs his or her nose with hand.*
4. *Point to a student who stretches his or her arms up high.*
5. *Point to a student who dances like a bear.*
6. *All students pretend to sing.*

Ten Little Pumpkins



Ten little pumpkins fresh from the vine,
One sits down and then there are nine.

Nine little pumpkins standing up straight
One bends over and then there are eight.

Eight little pumpkins -the clock strikes eleven,
One runs away and then there are seven.

Seven little pumpkin doing funny tricks,
One forgets how and then there are six.

Six little pumpkins looking at a hive,
One gets stung and then there are five.

Five little pumpkins knocking at the door,
One steps back and then there are four.

Four little pumpkins playing by the sea
One falls asleep and then there are three.

Three little pumpkins, friends just like you,
One goes home and then there are two.

Two little pumpkins having lots of fun,
One goes to bed and there is one.

One little pumpkin, sitting in the sun.
Goes to look for others and then there are none.



Tempting Pumpkin Treats

Roasted Pumpkin Seeds

The following recipe makes a delicious classroom treat that is fun and easy!

You'll need: Pumpkin seeds (clean and dry), 1 qt. water, 1 Tablespoon of vegetable oil, 2 Tablespoons of salt

Procedure:

1. Pick through the seeds, removing any cut seeds and as much fiber as possible.
2. Bring the water and salt to a boil. Add the seeds and boil for 10 minutes. Drain, spread on paper towels, and dry.
3. Preheat oven to 250 degrees.
4. Place the seeds in a bowl and toss with the oil.
5. Spread seeds evenly in a single layer on a large cookie sheet.
6. Place in preheated oven and roast for 30-40 minutes, stirring about every 10 minutes, until crisp and golden brown.
7. Enjoy!



Mini-Pumpkins

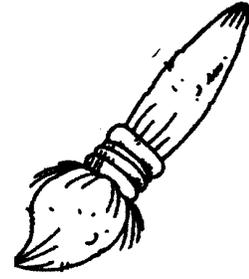
Create a sweet treat during pumpkin week!

You'll need: Candy orange slices (6-7 per child), green gumdrops, 1-can white icing, plastic knife, paper towels or plates

Then you: (Working in a small group or center)

1. Pass out materials to each child.
2. Demonstrate how to "glue" the orange slices together with icing, sides together with the bottom edge facing out to form a pumpkin.
3. When the pumpkin is complete, add a green gumdrop for the stem.
4. Admire for a minute, then enjoy!

The Artistic Pumpkin



Would you like a pumpkin patch in the classroom, but don't have the time or room to grow your own? Turn your students loose with the following art ideas and watch your pumpkin patch spring to life!

Paper Bag Pumpkin Patch

You'll need: Brown paper bags (lunch size), orange tempera paint, brushes or sponge applicators, green yarn or curling ribbon

Next:

1. Have students write their names on the bottoms of the bags.
2. Use a brush or sponge applicator to paint bags with orange tempera paint.
3. Let the bags dry for at least an hour.
4. Stuff with paper and tie the top with green yarn or curling ribbon.

Then: Display your pumpkins on a windowsill or counter. You may turn them into jack-o-lanterns for Halloween by adding construction paper features.

Create a Patch of Mini-Pumpkins

This idea works best in an art center or with a small group.

You'll need: 4 in. x 12 in. strips of brown paper (grocery bags are great), a sponge, orange tempera paint, green markers, fine point black markers, Styrofoam meat tray.

Next:

1. Cut out one strip of brown paper for each student.
2. Place the damp sponge on the Styrofoam meat tray. Cover sponge with orange tempera paint and let it soak in.
3. Touch fingertips to the paint-soaked sponge and press onto the brown paper, creating mini-pumpkins.
4. Allow at least an hour to dry. Add stems, vines, and leaves with a green marker or crayon.
5. Label the pumpkin patches with the students' names. For example: Mike's Pumpkin Patch.

Tin Can Jack-O-Lantern

This can be used as a room decoration, candy holder, or gift.

You'll need: A large can for each child (1 lb. coffee size), white and orange acrylic craft paint, twine or pipe cleaners, black felt, Elmer's glue.

Next:

1. Thoroughly wash and dry the cans, removing all outside paper and glue.
2. Paint cans with one coat of white paint and let dry.
3. Paint cans with a coat of orange paint and let dry.
4. Cut shapes of black felt for the facial features and glue on each can.
5. Punch two holes on opposite sides of the top edge of each can.
6. Use twine or twist pipe cleaners through the holes for handles.

Then: Fill with candy or display in the classroom as decorations.



Paper Plate Pumpkins

What's inside that pumpkin?

You'll need: Paper plates (two per child), white glue, orange crayons or markers, small pieces of yellow or orange yarn, pumpkin seeds, brads

Next:

1. Color both the top and bottom sides of two paper plates with crayons or markers.
2. Glue small pieces of yarn and pumpkin seeds to the top side of the first plate.
3. Print –“What's inside a pumpkin?” on the top side of the second plate.
4. Add a stem and leaves cut from construction paper just above the printing on the second plate.
5. Fasten the two plates together with a brad so that the bottom of the second plate is touching the top of the first plate with the yarn and seeds attached.

Language Arts for Pumpkin Fans

Pumpkin Shape Poetry

Objective: Students will be able to list and use adjectives.

You'll need: A pumpkin, chart paper, marker, 8" x11" white drawing paper (one sheet per student), pumpkin shapes to trace, pencils, fine-point black markers (optional)

Procedure:

1. Display the pumpkin in a spot visible to all students.
2. Lead students in a discussion of adjectives as describing words and elicit specific examples of adjectives that describe the pumpkin.
3. List student-supplied adjectives on chart paper for all to see.
4. Have students choose their favorite five adjectives from the list and record them on a piece of notebook paper.
5. Distribute white art paper and ask each student to lightly trace around one of the pumpkin patterns.
(NOTE: using a variety of pumpkin shapes makes the final display more interesting)
6. Use the list of favorite adjectives and have students copy the words in order around the outline of their pumpkins, repeating the pattern until the entire outline is complete. Trace over the words with a fine-point marker.
7. Erase all pencil marks.
8. Share with other class members and display for all to admire.

Pumpkin Shape Books

Objective: Students will create and share pumpkin stories.

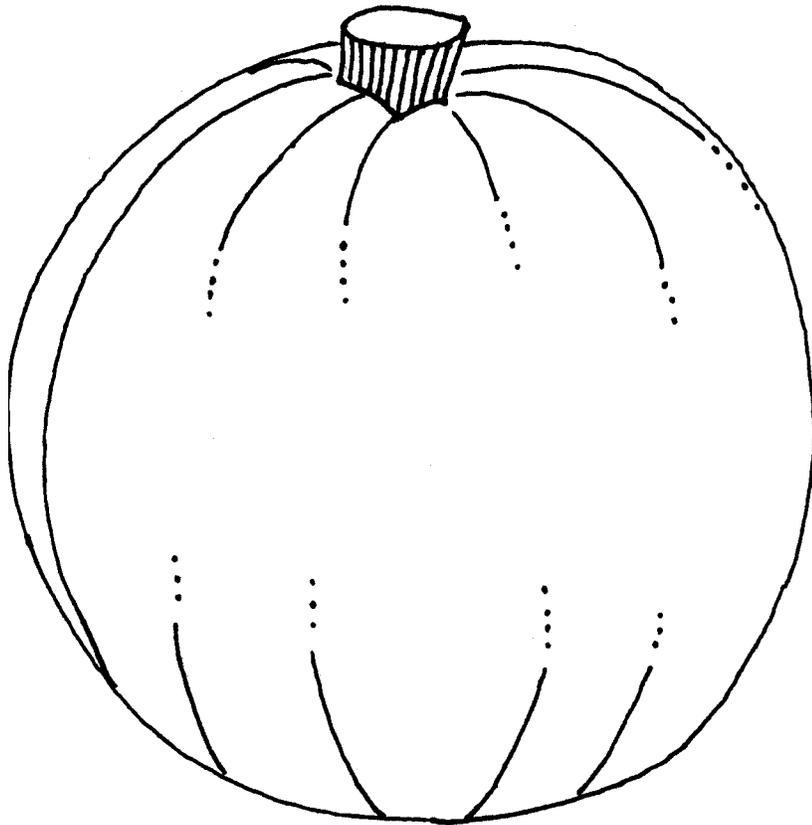
You'll need: Pumpkin shapes to trace (see previous lesson), orange construction paper, white paper, crayons, pencils, stapler.

Procedure:

1. Trace pumpkin shapes onto orange construction paper and plain white paper. Cut out in sufficient quantity for each student to make a book.
2. Brainstorm ideas for pumpkin stories. Develop an information web with students on large chart paper.
3. Direct students to complete a rough draft. Conference with students to edit their efforts.
4. Copy final stories on pumpkin-shaped white paper. Use orange construction paper pumpkins for front and back covers. Add jack-o-lantern faces with black crayon.
5. Share stories with other class members.

Pumpkin Templates for Shape Poetry

Directions: Enlarge and trace onto poster board or manila tagboard. Cut out and use to create outline patterns for pumpkin poetry and shape books.



A Pumpkin Bibliography

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Pumpkin Websites

The Pumpkin Patch. Features clip art, how-to-grow information, articles, recipes, pumpkin records, seeds, and more.

www.backyardgardener.com/pump.html

Swan's Pumpkin Farm. Features fun facts, word scrambles, trivia, and FAQs.

www.thepumpkinfarm.com/index.html

The Magic Invisible Pumpkin. A cute (and true) story.

http://garyflegal.com/a_story_for_halloween.html

University of Illinois Extension. Comprehensive site featuring history, facts, recipes, and more.

<http://www.urbanext.uiuc.edu/pumpkins/index.html>

Pumpkin Nook. Has growing information, recipes, facts, history, and games.

www.pumpkinnook.com

Other Resources

Pumpkin Circle: book and video. George Levenson. Berkeley: Tricycle Press.

Video narrated by Danny Glover: 20 minutes. 1-800-827-0949

www.pumpkincircle.com

