



Mesilla Valley Maze
2023 Educational Program
All About Pumpkins

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Notes to the Teacher

The following lessons correlate with New Mexico Common Core State Standards, Next Generation Science Standards (NGSS) and Texas Essential Knowledge and Skills (TEKS).

Each lesson may be modified by the teacher to suit the various grade levels and skill sets of students.

Many resources were used to compile these lessons; you may refer to certain websites to find out more information within each lesson.

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What to Expect

This curriculum is intended to be used both before and after your field trip to the Mesilla Valley Maze. Lessons 1-2 should be completed before your visit, students will then participate in the Outdoor Classroom at the Mesilla Valley Maze for Lesson 3, and supplementary Lessons 4-5 may be utilized in the classroom after your field trip. Students may also return to Lesson 1 (KWL Chart) after their visit to complete the last column of their chart.

Lesson 1: Before the Field Trip

KWL Pumpkins Chart

Objective: Students will evaluate their current knowledge of pumpkins by discussing their thoughts with their classmates, propose ideas of what they would like to learn while at the maze and then articulate what they learned during their visit.

Standards & Benchmarks:

New Mexico: NMCC: K.SL.1, 1.SL.1b, 2.SL.1c, 3.SL.1c-d, 4.SL.1d, 5.SL.1c

Texas: TEKS K.12A, 1.13A, 2.1D, 3.1A, 4.1A, 5.1A

Procedures:

1. Have Students create a K-W-L chart in their notebooks, let them work on poster paper in groups, or provide copies of the pre-made chart below.
2. Instruct students to get with a partner and then “think-pair-share” about what they already know about pumpkins.
3. Then, as a class, discuss some of the answers your students have come up with. If necessary, you may provide them with the following topics to get them started: how pumpkins grow, what we use pumpkins for, where we see pumpkins in our everyday lives, who grows them, etc.
4. After discussing, instruct students to fill out the K, or “What I KNOW” column of their chart.
5. Then, have students “think-pair-share” again to discuss what they’d like to learn. Again, as a class, discuss these questions and have students fill out the W, or “What I WANT to learn” column on their page.
6. Students will then fill out the L, or “What I LEARNED” column using the same methods as before once they return from their field trip.



Name:
Date:

Pumpkins K-W-L Chart

What I KNOW	What I WANT to learn	What I LEARNED

Lesson 2: How Do Things Grow?

Objective:

Students will begin to consider how various things grow, and compare/contrast the many similarities, and differences, of each's process.

Standards & Benchmarks:

New Mexico: NGSS K-LS1-1, K-ESS3-1, 1-LS3-1, 2-LS2-2, 3-LS1-1, 4-LS1-1, 5-LS1-1

Texas: TEKS Science: K.10D, 1.2A, 1.3B, 2.3B, 3.10B, 4.10C, 5.10A

Materials:

White board + markers

Notebook paper or poster paper

Markers/Colored Pencils

Procedure:

1. Hook students' attention by asking them if they have always been the age that they currently are. Naturally, they will say no. Begin asking them what other ages they have been, and how they have changed since then.
2. Lead their discussion to where they first started, as babies. Have them slowly walk you through the process of how they have grown since then.
3. For younger students, this will provide very basic steps of baby, to toddler, to their current age and most likely won't have much detail. For older students, ask them to be more specific about how exactly they have changed over the years, what skills they have learned (walking, talking, reading, writing, etc.), how they have physically changed, and any other pertinent changes that have occurred.
4. As students discuss this topic with their classmates and teacher, begin to draw out the process on your board using arrows between each change, or stage.
5. Ask them what happens after their current age. Lead them to say teenager, adult, older adult and so on.

6. Once students can describe the basic human life process, ask them to further explain how *other* things grow. For younger students, discuss one or two topics (animals, flowers, insects) and discuss/draw the cycle together as a class either on poster paper or within their class notebooks.
7. For older, or more advanced students, have them get in pairs or groups to draw out very basic ideas of what they think the life cycle of other things would be. Provide students with various topics (animals, flowers, fruits, plants, insects). Have students draw this process on poster paper and share what they have learned about their topic with their peers.
8. Once students understand how life cycles in general work, ask them how what they think the life cycle of a *pumpkin* would be. As a class, come up with a basic idea and draw it on poster paper.
9. After your visit to the maze and the Outdoor Classroom, return to your Pumpkin Life Cycle drawing and modify it to correctly depict the process that students learned during their field trip.
10. Furthermore, move on to *Lesson 4: Life Cycle of a Pumpkin*, as an enrichment activity.

Lesson 3: All About Pumpkins

At the Mesilla Valley Maze Outdoor Classroom

Objective:

Students will learn about the life cycle of a pumpkin, what a pumpkin can do, and the many uses of pumpkins.

Standards & Benchmarks:

New Mexico: NGSS K-LS1-1, K-ESS3-1, 1-LS3-1, 2-LS2-2, 3-LS1-1, 4-LS1-1, 5-LS1-1

Texas: Science TEKS K.10.C-D, 1.10.B, 2.9.A, 2.2.A, 3.9.B, 4.10.C, 5.9.A

Procedure:

1. Students will attend the Outdoor Classroom lesson and participate in the discussion of how pumpkins grow, what pumpkins can do, and the many ways in which we use pumpkins.

This lesson is taught by a New Mexico licensed, bilingual teacher.

Lesson 4: The Life Cycle of a Pumpkin

Lesson adapted from atozteacherstuff.com.

Objective:

Students will recognize and be able to explain the life cycle of plants, pumpkins specifically. Students will be able to correctly sequence stages of a pumpkin life cycle.

Standards & Benchmarks:

New Mexico: NGSS K-LS1-1, K-ESS3-1, 1-LS3-1, 2-LS2-2, 3-LS1-1, 4-LS1-1, 5-LS1-1

Texas: TEKS Science: K.10D, 1.10B, 2.9A, 3.2B, 4.10C, 5.2A,

Materials:

Life Cycle of A... Pumpkin by Ron Fridell and Patricia Walsh, or *Pumpkin,*

Pumpkin by Jeanne Titherington

1 Pumpkin Life Cycle printable [Pumpkin Life Cycle Printable](#)

Crayons or Markers

1 foot piece of yarn

Tape or Glue

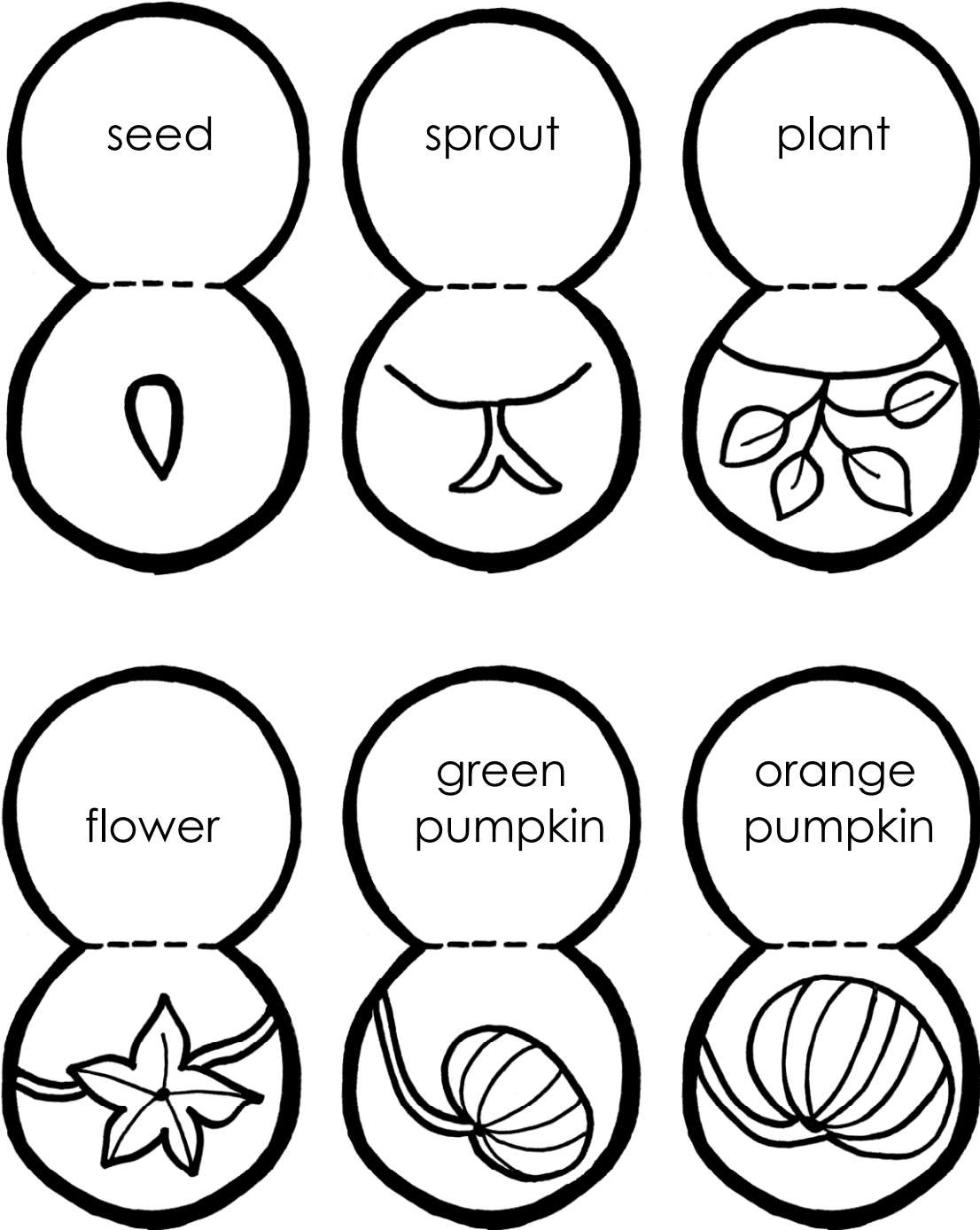
Procedure:

1. Before completing this activity, read the story *Life Cycle Of A...Pumpkin* by Fridell and Walsh.
2. Color and cut out the life cycle stages from the printable below. *For older students, you may provide them with sentence strips explaining each step of the process rather than the images themselves. Or, provide the images and have students match the correct sentences to them before putting the pumpkin together.*
3. Make a jack-o-lantern for the last stage in the life cycle. You can staple two paper plates together and decorate it like a jack-o-lantern. Leave a section unstapled so the pieces can be stored inside the pumpkin.
4. Attach a piece of yarn to the inside of the pumpkin with tape.

5. Attach pictures to the yarn that represent each of the steps leading up to the jack-o-lantern. The pictures should be folded on the dashed line and glued to the yarn so that the picture is on one side and the word is on the other side.
6. The “vine” can be stuffed inside the pumpkin and gradually pulled out as students retell the Pumpkin, Pumpkin story, or recite the steps of the pumpkin life cycle. Be sure the pieces are in order so that it starts with the seed and ends with the jack-o-lantern: Seed, sprout, plant, flower, green pumpkin, orange pumpkin, jack-o-lantern.

Pumpkin Life Cycle Printable

Pumpkin Life Cycle



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Lesson 5: Pumpkin Knowledge Assessment

Objective:

Students will demonstrate their knowledge of pumpkins.

Procedure:

Modifying by grade level, have students answer the following evaluative questions after they have visited the Mesilla Valley Maze, attended the Outdoor Classroom lesson and completed Lessons 1, 2, and 4.

Pumpkin Questions:

1. While at the maze, you learned and saw many different things. Write 3-5 sentences about what you learned.

2. Draw a diagram to show the life cycle of a pumpkin.

3. What part of the pumpkin plant do we eat?

4. Pumpkins come from the same plant family as:
 - a. Lettuce
 - b. Grass
 - c. Squash
 - d. Mushrooms

5. Name the important things that are necessary for a plant to grow.

6. What are at least 3 uses for pumpkins?

Beanie Baby

Adapted from Illinois Ag in the Classroom

Objective: Upon completion of this activity, students will have a better understanding of the plant germination process.

Benchmarks & Standards:

New Mexico: NGSS K-LS1-1, K-ESS3-1, 1-LS3-1, 2-LS2-2, 3-LS1-1, 4-LS1-1, 5-LS1-1

Texas: TEKS Science: K.10D, 1.10B, 2.9A, 3.2B, 4.10C, 5.2A

Suggested Reading Materials:

Oh Say Can you Seed by Bonnie Worth, *One Bean* by Anne Rockwell, *Life Cycle of a Pumpkin* by Fridell and Walsh

Materials:

Jewelry size re-sealable bag

Hole Punch

Crystal soil

Pumpkin Seeds

Measuring Spoons

Yarn

Water

Procedure:

1. Punch a hole in the top of your bag
2. Place a small $\frac{1}{4}$ teaspoon of Crystal Soil into the bag.
3. Add 2 or 3 pumpkin seeds.
4. Add 1 tablespoon of water.
5. Seal your bag firmly.
6. Insert the yarn into the hole to make a necklace.
7. Wear your Beanie Baby around your neck and under your shirt to keep it in a warm, dark place.
8. Check your Beanie Baby several times a day for germination and record the growth.

Lesson Extenders:

1. Try this experiment with other seeds and record the similarities and differences.
2. Experiment with other controls like light, heat, soil medium, water and record the similarities and differences. Identify factors that affect the growth of the beanie babies.

Garden in a Glove

Adapted from Illinois Ag in the Classroom

Objective:

Students will conduct a scientific experiment and record data to explain the simple life cycle as well as the need of plants.

Benchmarks & Standards:

New Mexico: NGSS K-LS1-1, K-ESS3-1, 1-LS3-1, 2-LS2-2, 3-LS1-1, 4-LS1-1, 5-LS1-1

Texas: TEKS Science: K.10D, 1.10B, 2.9A, 3.2B, 4.10C, 5.2A

Suggested Reading Material:

Our Generous Garden by Anne Nagro, *The Life Cycle of a Pumpkin* by Fridell and Walsh

Materials:

Clear Plastic Food Service Glove
Tie or piece of string
5 Cotton Balls
Permanent Marker
Microscope (optional)

Pencil or Popsicle Stick
Twist
Water
Plant Diary
5 types of Seed

Procedures:

1. Write your name on a clear plastic food service glove.
2. Using the permanent marker, write the name of a seed you will be planting on each finger.
3. Wet five cotton balls and wring them out.
4. Dip each cotton ball into 1 seed type. The seeds should stick to the cotton ball.
5. Put the cotton ball with the seeds attached into the finger of the glove that is labeled with that type of seed. **Hint:** *For younger students, you may choose to use one type of seed for all 5 fingers. A pencil or a popsicle stick may also be handy in pushing the cotton ball to the bottom of each finger.*
6. Blow up the plastic glove and close it with a twist tie or tie a piece of string around the top.

7. Tape the glove to a window, chalkboard, or wall. You may want to hang a clothesline under a chalk tray and use clothes pins to hold the gloves on.

Hint: *Do not tape to the window in the winter because the window will be too cold to allow for germination.*

8. The seeds will germinate in 3 to 5 days. Keep a plant diary and look at the seeds under the microscope.

9. Transplant the seeds in about 1 ½ to 2 weeks by cutting the tips of the fingers off the glove. Transplant the cotton ball and small plants into soil.

10. After growing to full size, vegetables can be harvested to use in your soup!

Three Sisters Salad

Adapted from LCPS Teaching Center "Three Bean Salads"

Objective:

Students will work in teams to determine how many of each of the “three sisters” is needed to create a salad.

Benchmarks & Standards:

New Mexico: NMCC: Math: K.OA.1, 1.OA.1, 2.OA.1, 3.OA.3, 3.NF.1, 4.NF.2,3b, 5.NF.2

Texas: TEKS Math: K.1B, 1.5B, 2.7, 2.3C, 3.4H, 4.1A-B, 5.1A

Suggested Reading Material:

In the Three Sisters Garden: Native American stories and seasonal activities for the curious child by Joanne Dennee

Background Knowledge:

Native Americans have traditionally grown three crops together...corn, beans and squash-for hundreds of years. A genius solution, each plant helps the other grow. Called “companion planting,” the Three Sisters also hold a spiritual meaning for Native Americans.

Materials:

3 types of dry seeds: Corn, beans, pumpkin (or other squash)
Paper plates to hold small portions of seeds
Three Sisters Salad Activity Sheet

Procedure:

1. Divide the class into teams of 3-4 students.
2. Explain to students that the following activity includes slightly difficult algebra problems, which can be solved easily by trial and error using the seeds.
3. Encourage your students to guess and adjust as they work.
4. Each “salad” must contain ALL THREE TYPES of seeds.
5. Use the Three Sisters Activity Sheet to create each salad.

Additional Information:

A *ratio* is the numerical relation between two quantities, usually determined by dividing one of the numbers by the other and expressing the result as a

fraction or a percent. *Proportion* is a statement showing that two ratios are equal. For example, the ratio $\frac{1}{2}$ is the same as the ratio $\frac{3}{6}$ or $\frac{2}{4}$. This is an important idea in algebra since if any three of the numbers in a proportion are known, the fourth can be found-this is the “unknown” in algebra problems.

Three Sisters Salad Problems

Adapted from LCPS Teaching Center “Three Bean Salads”

<p>Salad ONE Contains: 2 Corn Seeds Twice as many Beans as Corn Seeds 10 seeds in all</p>	<p>Salad FIVE contains: 12 seeds in all $\frac{1}{2}$ of the seeds are Beans Corn seeds make up $\frac{1}{4}$ of the salad</p>
<p>Salad TWO contains: 4 Beans $\frac{1}{2}$ as many Squash seeds as Beans 10 seeds in all</p>	<p>Salad SIX contains: Contains at least 12 seeds One more Corn seed than Bean seed One more Bean than Squash seed</p>
<p>Salad THREE contains: Corn makes up $\frac{1}{2}$ of this salad The salad has exactly 2 Beans The number of Corn seeds is double the number of Beans</p>	<p>Salad SEVEN contains: 3 times as many Beans as Squash seeds One more Corn seed than Bean seed 8 seeds in all</p>
<p>Salad FOUR contains: The same number of Beans as Corn seeds 3 more Squash seeds than Beans A total of 18 seeds</p>	<p>Salad EIGHT contains: An equal number of Beans and Squash seeds 5 more Corn seeds than Bean Seeds No more than 20 seeds</p>
<p>EXTENSION: Make up different salads. Write instructions for someone else to make your salads.</p>	

Three Sisters Salad Solutions

Adapted from LCPS Teaching Center "Three Bean Salads

NOTE: Some salads can contain other possible solutions

<p>Salad ONE contains: 2 Corn Seeds Twice as many Beans as Corn Seeds 10 seeds in all <u>POSSIBLE SOLUTION:</u> 2 CORN SEEDS 4 BEAN SEEDS 4 SQUASH SEEDS 10 TOTAL SEEDS</p>	<p>Salad FIVE contains: 12 seeds in all ½ of the seeds are Beans Corn seeds make up ¼ of the salad <u>POSSIBLE SOLUTION:</u> 6 BEAN SEEDS 3 CORN SEEDS 3 SQUASH SEEDS 12 TOTAL SEEDS</p>
<p>Salad TWO contains: 4 Beans ½ as many Squash seeds as Beans 10 seeds in all <u>POSSIBLE SOLUTION:</u> 4 BEAN SEEDS 2 SQUASH SEEDS 4 CORN SEEDS 10 TOTAL SEEDS</p>	<p>Salad SIX contains: Contains at least 12 seeds One more Corn seed than Bean seed One more Bean than Squash seed <u>POSSIBLE SOLUTION:</u> 5 CORN SEEDS 4 BEAN SEEDS 3 SQUASH SEEDS 12 TOTAL SEEDS</p>
<p>Salad THREE contains: Corn makes up ½ of this salad The salad has exactly 2 Beans The number of Corn seeds is double the number of Beans <u>POSSIBLE SOLUTION:</u> 2 BEAN SEEDS 4 CORN SEEDS 2 SQUASH SEEDS</p>	<p>Salad SEVEN contains: 3 times as many Beans as Squash seeds One more Corn seed than Bean seed 8 seeds in all <u>POSSIBLE SOLUTION:</u> 1 SQUASH SEEDS 3 BEAN SEEDS 4 CORN SEEDS 8 TOTAL SEEDS</p>
<p>Salad FOUR contains: The same number of Beans as Corn seeds 3 more Squash seeds than Beans A total of 18 seeds <u>POSSIBLE SOLUTION:</u> 5 BEAN SEEDS 5 CORN SEEDS 8 SQUASH SEEDS</p>	<p>Salad EIGHT contains: An equal number of Beans and Squash seeds 5 more Corn seeds than Bean Seeds No more than 20 seeds <u>POSSIBLE SOLUTION:</u> 4 BEAN SEEDS 9 CORN SEEDS 4 SQUASH SEEDS</p>