INDIGENOUS WISDOM:
CENTURIES OF PUEBLO IMPACT IN NEW MEXICO

A Pueblo-Based Educational Curriculum • IndianPuebloEducation.org

Unit Plan Format:

Section A: Introductory Materials
Name: Celeste Naranjo
Title of Unit: Interdependence of Corn, Beans, and Squash and the Land
Content Area: Elementary Science
Grade Levels: 1st and 2nd Grade

Rationale:
Many tribal communities have sustained their way of life by adapting to the land from which they come. This knowledge has been passed down from generation to generation and modern-day science is finally starting to realize how valuable it can be.

Agricultural techniques have been used by Native tribes from different parts of North America. Corn, beans, and squash, also known as the "three sisters," have been inter-planted to help Native people sustain life. The three plants benefit one another when cultivated together.
Investigation of plant growth and its relationship to our land can be influential for students to appreciate. Moreover, students will see the benefits of these organic crops.

Stories, customs, celebrations, and ceremonies are associated with the "three sisters" because they play a central role in the life of Pueblo people. Students will learn to appreciate what the land provides. In the following lessons, students will begin to understand a portion of the agricultural history of tribal nations by learning how tribes preserve natural resources and soil nutrients to harvest crops.

Unit Goals:

- Students will appreciate the connection and interdependence of all things. They will discuss and analyze the symbiotic relationship between corn, beans, and squash.
- Students will learn how the three plants benefit each other and what nutrients they provide.
- Students will learn what the land provides and in return, respect the land.
- Students will understand why it is important to preserve the land for future generations.
- Students will acknowledge how indigenous cultures weave food cultivation and preparation into the fabric of everyday life.

Standards: (Common Core Standards and/or NextGen Standards for science)

ELEMENTARY-NextGen Science

FIRST GRADE 1-LS3-1. Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents. 1-ESS1-1. Use observation of the sun, moon, and stars to describe patterns that can be predicted.
SECOND GRADE 2-LS2-1. Plan and conduct an investigation to determine if plants need sunlight and water to grow. 2-ESS2-1. Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land.

ELEMENTARY-ELA-Common Core Standards

FIRST GRADE CCSS.ELA-LITERACY.RL.1.1 Ask and answer questions about key details in a text. CCSS.ELA-LITERACY.RL.1.2 Retell stories, including key details, and demonstrate understanding of their central message or lesson. CCSS.ELA-LITERACY.W.1.3 Write narratives in which they recount two or more appropriately sequenced events, include some details regarding what happened, use temporal words to signal event order, and provide some sense of closure. CCSS.ELA-LITERACY.SL.1.1 Participate in collaborative conversations with diverse partners about grade 1 topics and texts with peers and adults in small and larger groups. CCSS.ELA-LITERACY.SL.1.2 Ask and answer questions about key details in a text read aloud or information presented orally or through other media.
SECOND GRADE CCSS.ELA-LITERACY.RL.2.1 Ask and answer such questions as who, what, where, when, why, and how to demonstrate understanding of key details in a text. CCSS.ELA-LITERACY.RL.2.2 Recount stories, including fables and folktales from diverse cultures, and determine their central message, lesson, or moral. CCSS.ELA-LITERACY.W.2.2 Write informative/explanatory texts in which they introduce a topic, use facts and definitions to develop points, and provide a concluding statement or section. CCSS.ELA-LITERACY.SL.2.1.B Build on others talk in conversations by linking their comments to the remarks of others. CCSS.ELA-LITERACY.SL.2.1.C Ask for clarification and further explanation as needed about the topics and texts under discussion. CCSS.ELA-LITERACY.SL.2.3 Ask and answer questions about what a speaker says in order to clarify comprehension, gather additional information, or deepen understanding of a topic or issue.

ELEMENTARY-Speaking and Listening-Common Core Standards

1st Grade SL.1.1. Participate in collaborative conversations with diverse partners about grade 1 topics and texts with peers and adults in small and larger groups. Follow agreed-upon rules for discussions (e.g., listening to others with care, speaking one at a time about the topics and texts under discussion).

Build on others' talk in conversations by responding to the comments of others through multiple exchanges.
Ask questions to clear up any confusion about the topics and texts under discussion.
SL.1.2. Ask and answer questions about key details in a text read aloud or information presented orally or through other media.
SL.1.3. Ask and answer questions about what a speaker says in order to gather additional information or clarify something that is not understood.
Presentation of Knowledge and Ideas
SL.1.4. Describe people, places, things, and events with relevant details, expressing ideas and feelings clearly.
SL.1.5. Add drawings or other visual displays to descriptions when appropriate to clarify ideas, thoughts, and feelings.
SL.1.6. Produce complete sentences when appropriate to task and situation.

2nd Grade

SL.2.1. Participate in collaborative conversations with diverse partners about grade 2 topics and texts with peers and adults in small and larger groups.
Follow agreed-upon rules for discussions (e.g., gaining the floor in respectful ways, listening to others with care, speaking one at a time about the topics and texts under discussion).
Build on others' talk in conversations by linking their comments to the remarks of others.
Ask for clarification and further explanation as needed about the topics and texts under discussion.
SL.2.2. Recount or describe key ideas or details from a text read aloud or information presented orally or through other media.
SL.2.3. Ask and answer questions about what a speaker says in order to clarify comprehension, gather additional information, or deepen understanding of a topic or issue.
Presentation of Knowledge and Ideas

SL.2.4. Tell a story or recount an experience with appropriate facts and relevant, descriptive details, speaking audibly in coherent sentences.
SL.2.5. Create audio recordings of stories or poems; add drawings or other visual displays to stories or recounts of experiences when appropriate to clarify ideas, thoughts, and feelings.
SL.2.6. Produce complete sentences when appropriate to task and situation in order to provide requested detail or clarification.

ELEMENTARY-Math-Common Core Standards

1st Grade 1.MD.1. Order three objects by length; compare the lengths of two objects indirectly by using a third object. 1.MD.2. Express the length of an object as a whole number of length units, by laying multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps. Limit to contexts where the object being measured is spanned by a whole number of length units with no gaps or overlaps.
2nd Grade 2.MD.1. Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes. 2.MD.2. Measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chosen. 2.MD.3. Estimate lengths using units of inches, feet, centimeters, and meters. 2.MD.4. Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.

Lesson Plan Format:

Section B: Lesson Plan One
Title: The Three Sisters
Duration: 90-minute time block for 2 consecutive days
Grade Level: Kindergarten – Second Grade

Learning Objectives:
1. Students will share background knowledge about planting using a KWL chart.
2. Students will learn about what nutrients are obtained from corn, beans, and squash.
3. Students will learn what the three (3) planting methods are and when to begin planting.
4. Students will create a poster showing how corn, beans, and squash grow when they are planted together.

Prerequisite Skills and Knowledge:
1. Group participation skills
2. Ability to share prior knowledge to help scaffold understanding for others.
3. Familiarity with food groups, particularly fruits, and vegetables.

Materials and Resources:
1. Document camera, laptop to show photos of planting
2. Chart paper for KWL recording
3. Poster board or butcher paper, art supplies/materials
4. Knowledge keeper from your community to share the planting process.
5. YouTube Video one: **The Legend of the Three Sisters-** https://youtu.be/ZCW0sK8OGXE
6. YouTube Video two: **Three Sisters: Companion Planting of North American Indigenous Peoples-** https://youtu.be/UeGRftRk0Uc

Background information about the Three Sisters according to Wikipedia (Free online Encyclopedia):

The Three Sisters are the three main agricultural crops of various Indigenous peoples of North America: squash, maize ("corn"), and climbing beans (typically tepary beans or common beans). In a technique known as companion planting, the maize and beans are often planted together in mounds formed by hilling soil around the base of the plants each year; squash is typically planted between the mounds. The cornstalk serves as a trellis for climbing beans, the beans fix nitrogen in their root nodules and stabilize the maize in high winds, and the wide leaves of the squash plant shade the ground, keeping the soil moist and helping prevent the establishment of weeds.

Guiding Questions:
1. What is the importance of corn, beans, and squash?
2. Why are corn, beans, and squash significant to Native tribes?
3. Why is it important to use a certain planting method to plant corn, beans, and squash?
4. How does each plant support the other?

Core Values:
- Respect & Appreciation

Procedure:

1. Begin the conversation and engage students about what will be studied.

a. To introduce the topic, share photographs of corn, bean, and squash plants. (Overhead projector or Promethean board)

b. Using a poster board or large piece of butcher paper, create a KWL chart with students, beginning only with the K and W. You will add to the chart after new knowledge is obtained. Students will use handout #1 to record their learning.

- K- What I already know
- W-What I want to know
- L-What I learned

c. Teach- Create an anchor chart to teach what corn, beans, and squash provide and what their classification is.

Corn (Vegetable)	Beans (Vegetable)	Squash (Fruit)
• Whole Grain • Vitamin B • Magnesium • Manganese	• Protein • Fiber	• Potassium • Vitamin A

d. Students will use handout #2 to record their learning.

2. After creating the KWL chart and anchor chart, students will watch two videos about the Three Sisters.

a. **The Legend of the Three Sisters**

https://youtu.be/ZCW0sK8OGXE

Pueblo Farming Methods for Your Resilient Garden

https://youtu.be/wVFBVlCzKmg

- Pause throughout the video for certain points of discussion.
- Pause throughout to have students record their findings.

b. Another option is to bring a knowledge keeper from the community to speak about information that is shared in the video.

c. Student will record their learning of the planting methods by drawing how the seeds are planted on handout #2

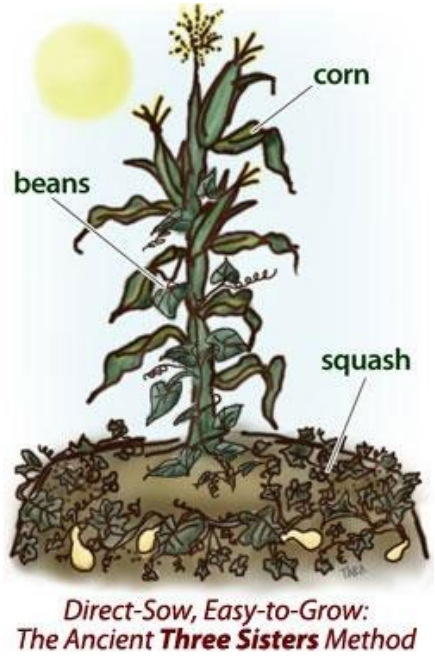
d. With a partner or in a group, students will create a poster of a "Three Sisters" plant with labeling. (Examples shown below)

- corn
- beans
- squash
- stem
- roots
- tassel
- ear of corn
- silk
- stalk
- kernel
- leaf
- flower
- tendrils
- fruit

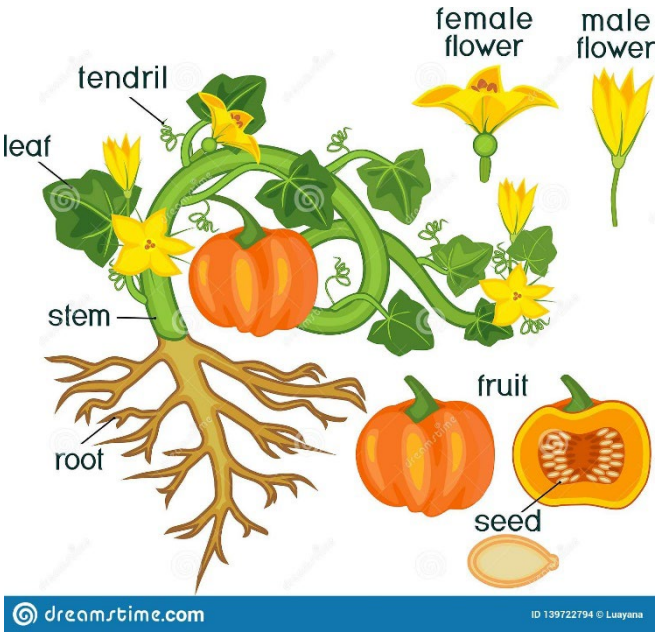
e. Students will present their posters and explain their learning to other students in another class. (Ex. 2nd-grade students will present to a kindergarten class.)

- They may come up with a story for their poster to creatively share with another class.
- Possible Story to share- Story of the Three Sisters: Corn is the tall grandmother who gives the beans a pole to climb up; beans climb the corn and feed the soil for the corn; squash keeps the soil moist for the thirsty beans and corn, and keeps away raccoons and other pests with its prickly stems. The Three Sisters are a good way to illustrate how we can work together for the good of everyone. Corn, beans, and squash also represent healthy foods.

f. Revisit the KWL chart and discuss and add new learning to the chart.



Direct-Sow, Easy-to-Grow:
The Ancient **Three Sisters** Method



Assessment:

1. Completion of handouts #1 and #2
2. Participation in class discussion
3. Completion of the poster with labeling

Modifications:

1. Pre-teach new vocabulary
2. Read aloud text and allow extended time.
3. Check in frequently for understanding and give feedback.
4. Simplify and repeat directions as needed
5. Add visual supports and cues (charts, pictures, color coding)
6. Sequence learning tasks from simple to complex
7. Give repeated opportunities to practice skills

Notes to Teacher:

This lesson is essential for students to scaffold their background knowledge for the second lesson in this unit.

- Tribal language knowledge can be incorporated with these lessons. For example, you may name the Three Sisters in your language along with all the part of the plants.
- Contact Pueblo tribal communities to help support student learning by reaching out to their Department of Natural Resources.
- Have students research tribal community (Pueblos) to gain background knowledge of their history so that they learn the significance of the Three Sisters.

- **Three Sisters: Companion Planting of North American Indigenous Peoples**
  https://youtu.be/UeGRftRk0Uc

- **Ancestral Pueblo Farming**
  https://www.nps.gov/band/learn/historyculture/ancestral-pueblo-farming.htm

- Vlasich, James A., (2005). Pueblo Indian Agriculture, University of New Mexico Press

Handout 1: Document can be printed for handouts.
Document Link: KWL Chart

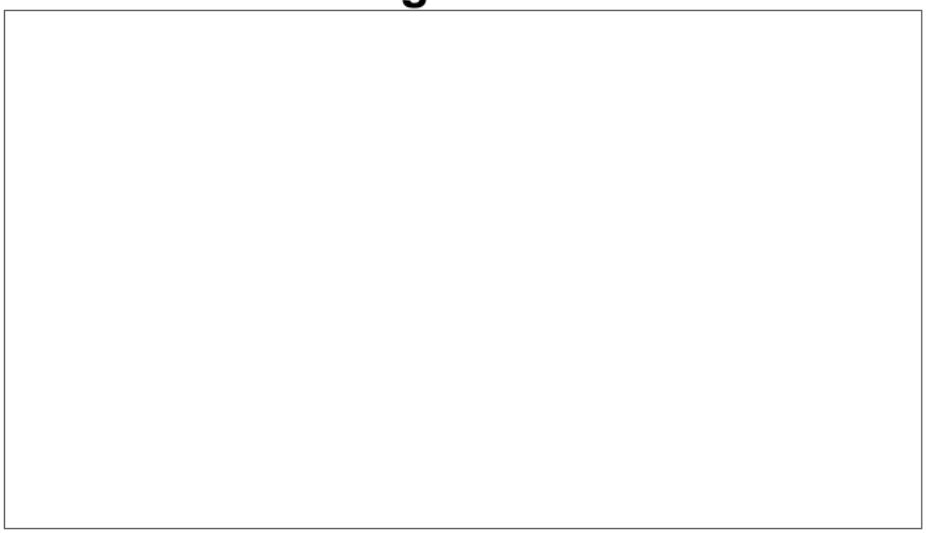
KWL		
What I Know	**Want to Know**	**What I Learned**

Handout 2: Slides can be printed as handouts
Document Link: Crop Classification Anchor Chart/Planting Methods

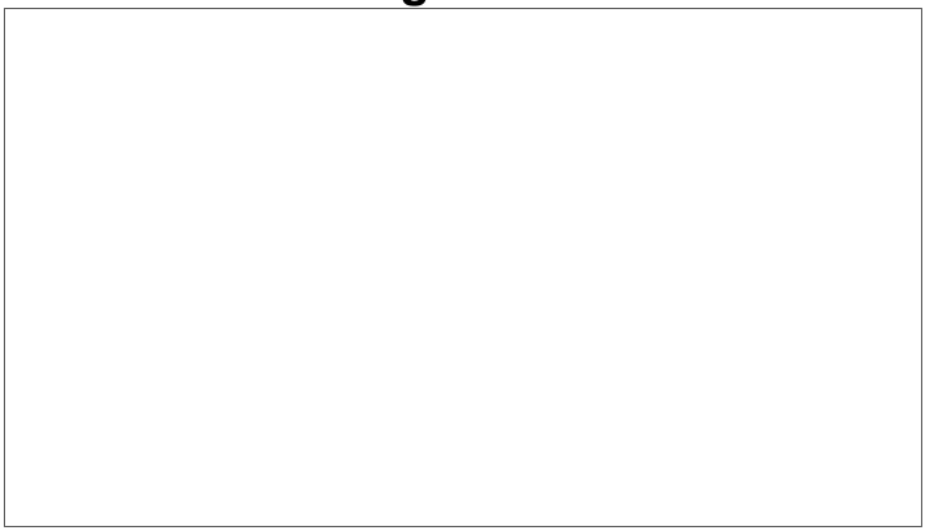
Corn-	Beans-	Squash-
• • • •	• •	• •

Planting Method 1

Planting Method 2



Planting Method 3



PC: L.Lewis, Cochiti Pueblo, 2020

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PC: A. Humetewa, 2020

PC: L.Lewis, Cochiti Pueblo, 2020

PC: L. Lewis, Cochiti Pueblo, 2022

PC: L.Lewis, Cochiti Pueblo, 2020

PC: L.Lewis, Cochiti Pueblo, 2020

Lesson Plan Format:

Section B: Lesson Plan Two
Title: Three Sisters Planting
Duration: Several class sessions in Mid-April for indoor planting, and early May for planting seeds directly into the garden.
Grade Level: 1st and 2nd grade

Learning Objectives:
1. Students will plant corn, beans, and squash. Indoor/Outdoor
2. Students will observe their symbiotic relationship – how they help each other by providing something to the other plants.
3. Students will understand companion planting – they do better when they are planted together
4. Students will identify why the land is significant in planting the Three Sisters.

Prerequisite Skills and Knowledge:
1. Familiarity with lesson one content
2. Basic knowledge about what plants need to grow.
   - space to grow
   - the right temperature
   - light
   - water
   - air
   - nutrients
   - time

Materials and Resources:
1. **An Oneida Elder Speaks About the Three Sisters Garden**
https://youtu.be/lSwGxJe4bVs
2. Individual indoor planting- 2-4" pots, soil, seeds, labeling sticks, water squirt bottle, tray, and a container for soil.
3. Outdoor planning- A place to plant, seed packets, trowels to make hills, colorful yarn to size the Three Sisters mound in the garden, and watering cans (3).

Guiding Questions:
1. What are the steps to planting?
2. Why is it important to respect the land to prepare for planting?
3. How is being responsible a significant part of planting?

Core Values:

- Responsibility
- Respect
- Community
- Love/Compassion

Procedure:

1. Share the video about an Onieda elder who speaks about their Three Sisters Garden
   An Oneida Elder Speaks About the Three Sisters Garden
   https://youtu.be/lSwGxJe4bVs
   a. Explain to students that Pueblo planting is similar to how the Oneida plant and harvest their crops.
   b. Pause the video throughout for points of discussion.
   c. Discuss the importance of the land and how it should be respected.
2. Teach- traditional Pueblo planting involves building a mound for the plants to be planted on and around. The corn grows straight and tall in the middle of the mound; it provides a great pole for the beans to wrap around as they grow. The beans provide nitrogen to the soil which the others use. The squash spreads along the ground and provides shade to retain moisture and prevents the growth of weeds. The prickly hairs on the squash plant also keep pests away from the other plants. This method is called companion planting – plants do better when they are planted together. Just like friends, they do better when they are playing together.
3. Teach- By planting vegetables (corn and beans), and fruit (squash), we can grow things that are essential for our body to have because of all the nutrients they provide. This method of planting is significant to many indigenous cultures in which stories, customs, celebrations, and ceremonies are associated with the "three sisters" because they play a central role in the life of many Native people.

Teachers Note: Utilize the method that works best for your class/school.

For Indoor Planting: Students will need a pot for every two students, approximately 12-15 pots. Each class should plant some of all three seeds. Plant one variety per pot, two seeds per pot. Some students will plant pumpkins, some will plant corn, and others will plant beans.

Have half of the class label their marking stick with the plant they are planting, once they have that done, they will add the soil, and show the process of planting including the depth of the seed. Cover the seed with soil and water them enough without soaking the soil. The other half of the class will do the same.

Get all pots onto the tray and water. Create a watering schedule for the seeds to get watered. Move plants to the sunlight in the classroom.

Revisit the great qualities of the three fruits/vegetables such as the great sweet taste, the vitamin A in the squash which is good for their eyes and skin, and the protein in the beans help us build muscle.

Once the seedlings have sprouted, they need to be taken out outside each day for 2-4 hours to a spot that is not too sunny or windy. This will prepare them for the transition to the outdoors once transplanted.

For planting outdoors in early May (directly into the garden)- Three (3) students will plant one mound. They will first make a circle to determine the size of the mound with the yarn, then to use the trowels to create the mound in one of the beds or directly in the ground, then plant the corn on top of the mound, beans near the corn, but midway down the mound add squash seeds on the outside of the mound. These seeds need to be kept moist. Create a schedule for watering, possibly once a week.

For planting seedlings into the garden in mid to late May- In class, review the symbiotic relationship and how the plants help each other. Talk about the parts of the plant and what nutrients are provided by each of them. Create three (3) groups. One group to create the mounds, one group per plant type to plant the seedling. Plant corn near the top, then beans mid-slope, and squash around the outside are. Water the seedlings. Create a schedule for watering and squash bug patrol.

Assessment:

- Participation while planting
- Completion of their observation journal using the rubric

Modifications:

1. 1-2 step directions planting directions
2. Frequent checks for understanding
3. Simplify and repeat directions as needed
4. Sequence learning tasks from simple to complex
5. Give repeated opportunities to practice skills

Notes to Teacher:
Learning targets for students will need to be adjusted based on their ability level. Partner students heterogeneously so that they are exposed to a wide range of experiences and knowledge.

Additional resource:
This resource can support students and their understanding of the land. (see Chapter 6 below)

Caduto, M.J. & Bruchac, J. (1988). *Keepers of the Earth: Native American Stories and Environmental Activities for Children*. Fulcrum Inc.,US

CHAPTER 6

Loo-Wit, The Fire-Keeper

(Nisqually—Pacific Northwest)

When the world was young, the Creator gave everyone all that was needed to be happy. The weather was always pleasant. There was food for everyone and room for all the people. Despite this, though, two brothers began to quarrel over the land. Each wanted to control it. It reached the point where each brother gathered together a group of men to support his claim. Soon it appeared there would be war.

The Creator saw this and was not pleased. He waited until the two brothers were asleep one night and then carried them to a new country. There a beautiful river flowed through and tall mountains rose into the clouds. He woke them just as the sun rose and they looked out from the mountaintop to the land below. They saw what a good place it was. It made their hearts good.

"Now," the Creator said, "this will be your land." Then he gave each of the brothers a bow and a single arrow. "Shoot your arrow into the air," the Creator said. "Where your arrow falls will be the land of you and your people, and you shall be a great chief there."

The brothers did as they were told. The older brother shot his arrow. It arched over the river and landed to the south in the valley of the Willamette River. There is where he and his people went, and they became the Multnomahs. The younger brother shot his arrow. It flew to the north of the great river. He and his people went there and became the Klickitats.

Then the Creator made a great stone bridge across the river. "This bridge," the Creator said, "is a sign of peace. You and your peoples can visit each other by crossing over this bridge. As long as you remain at peace, as long as your hearts are good, this bridge will stand."

For many seasons the two peoples remained at peace. They passed freely back and forth across the great stone bridge. One day, though, the people to the north looked south toward the Willamette and said, "Their lands are better than ours." One day, though, the people to the south looked north toward the Klickitat and said, "Their lands are more beautiful than ours." Then, once again, the people began to quarrel.

The Creator saw this and was not pleased. The people were becoming greedy again. Their hearts were becoming bad. The Creator darkened the skies and took fire away. Now the people grew cold. The rains of autumn began and the people suffered greatly.

"Give us back fire," they begged. "We wish to live again with each other in peace."

Their prayers reached the Creator's heart. There was only one place on Earth where fire still remained. An old woman named Loo-Wit had stayed out of the quarreling and was not greedy. It was in her lodge only that fire still burned. So the Creator went to Loo-Wit.

"If you will share your fire with all the people," The Creator said, "I will give you

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whatever you wish. Tell me what you want."

"I want to be young and beautiful," Loo-Wit said.

"That is the way it will be," said the Creator. "Now take your fire to the Great Stone Bridge above the river. Let all the people come to you and get fire. You must keep the fire burning there to remind people that their hearts must stay good."

The next morning, the skies grew clear and the people saw the sun rise for the first time in many days. The sun shone on the Great Stone Bridge and there the people saw a young woman as beautiful as the sunshine itself. Before her, there on the bridge, burned a fire. The people came to the fire and made up their quarrels. Loo-Wit gave each of them fire. Now their homes again became warm and peace was everywhere.

One day, though, the chief of the people to the north came to Loo-Wit's fire. He saw how beautiful she was and wanted her to be his wife. At the same time, the chief of the people to the south also saw Loo-Wit's beauty. He, too, wanted to marry her. Loo-Wit could not decide which of the two she liked better. Then the chiefs began to quarrel. Their peoples took up the quarrel and fighting began.

When The Creator saw the fighting he became angry. He broke down the Great Stone Bridge. He took each of the two chiefs and changed them into mountains. The chief of the Klickitat became the mountain we now know as Mount Adams. The chief of the Multnomahs became the mountain we now know as Mount Hood. Even as mountains, they continued to quarrel, throwing flames and stones at each other. In some places, the stones they threw almost blocked the river between them. That is why the Columbia River is so narrow in the place called the Dalles today.

Loo-Wit was heartbroken over the pain caused by her beauty. She no longer wanted to a beautiful young woman. She could no longer find peace as a human being. The Creator took pity on her and changed her into a mountain also, the most beautiful of the mountains. She was placed so that she stood between Mount Adams and Mount Hood, and she was allowed to keep the fire within herself which she had once shared on the Great Stone Bridge. Eventually she became known as Mount St. Helens and she slept peacefully.

Though she was asleep, Loo-Wit was still aware, the people said. The Creator had placed her between the two quarreling mountains to keep the peace, and it was intended that humans, too, should look at her beauty and remember to keep their hearts good, to share the land and treat it well. If we human beings do not treat the land with respect, the people said, Loo-Wit will wake up and let us know how unhappy she and the Creator have become again. So they said long before the day in the 1980s when Mount St. Helens woke again.

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The people saw a young woman as beautiful as the sunshine itself. Before her, there on the stone bridge, burned a fire.

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Handout 3: My Planting Journal template (additional pages are included in the document)
Document Link: My Planting Journal

My Planting Journal

By:_____

Date:_____

_____

_____

_____

Date:_____

_____

_____

_____

Date:_____

_____

_____

_____

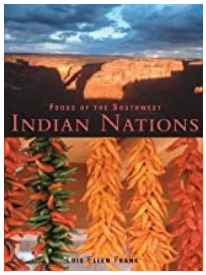
Rubric:

	Plant Observation Journal Rubric
4	• Beautiful • Neat handwriting (easy to read) • Detailed • Accurately colored pictures • Accurate written observations • Date included
3	• Neat Handwriting • Some detail in pictures • Observations include most details • Date included
2	• Sloppy Handwriting (Hard to read) • Little or No detail in pictures • Very little detail in observations • Date included
1 or 0	• Cannot read the handwriting • No pictures • Unrelated pictures • Inaccurate observations • No observations • No date

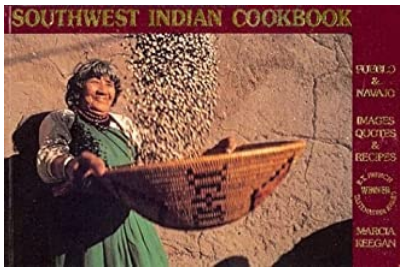
Culminating Activity:

1. Once the corn, beans and squash are harvested, share recipes with your students. Explain how a Pueblo diet includes the main ingredients of corn, beans, and squash in many of the dishes that are prepared for feast days or any meal for breakfast, lunch or dinner.
2. Students can use these recipes to generate their own cookbooks with the use of corn, beans, or squash. Use handout #3 to have students create a class recipe book. One page per two students. Snacks are easy for students to make; this could be an option for easy step-by-step directions.
3. Have the parents involved in making dishes with corn, beans, and squash to share for a family night at your school. Invite the community for a feast to share what the children have grown. Students can share their posters and plant journals with family members. Invite a group to dance the Pueblo Corn Dance (or any dance) during your family night. Students will realize that corn is especially used in song and dance.
4. Children's Farmers Market: After the crops are harvested, students can sell their goods to the community and advocate for eating healthy. This can be organized at your school or through your community health department. Community members can meet the young growers. The class recipe book can be distributed as well.

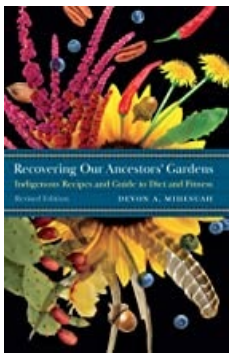
Recipes can be found in these cookbooks:



Lois Frank, Ellen. (2002) *Foods of the Southwest Indian Nations: Traditional and Contemporary Native American Recipes*. Ten Speed Press



Keegan, Marcia. (1987) *Southwest Indian Cookbook*. Clear Light Publications



Mihesuah, Devon A. (2020) *Recovering Our Ancestors' Gardens: Indigenous Recipes and Guide to Diet and Fitness*. Bison Books

Handout #3: Print for student use

Link: Recipe Template

Let's Get Cooking!

Recipe for:

Ingredients:	Equipment:
	Description:
Instructions:	