OMAHA SYMPHONY

American Indigenous Instruments

LESSON PLANS

Strings

Percussion

Woodwinds

HANDOUTS

Instrument List

Matching Game

Drawing Drums

OMAHA SYMPHONY

American Indigenous Instruments (Overview)

Key Topics: Instruments, Native American Culture, Compare and Contrast	**Grade:** 1-5
Materials: • Laptop/Projector • Link to overview video. • Instrument List Handout	**Length:** 15 min

State Standards: Grades K-5 Fine Arts & Social Studies
FA 2.4.3.a, FA 2.4.3.c, FA 2.4.3.d, FA 5.4.3.c, FA 5.4.3.d
SS 1.3.4a, SS 1.3.4.b, SS 1.4.3.c, SS 3.4.2.a, SS 5.4.2.b

Vocabulary

String Instruments: any musical instrument that produces sound by the vibration of stretched strings, which may be made of vegetable fiber, metal, animal gut, silk, or artificial materials such as plastic or nylon.

Percussion Instrument: any instrument that makes a sound when it is hit, shaken, or scraped.

Wind Instrument: a musical instrument in which sound is produced by the vibration of air, typically by the player blowing into the instrument.

Indigenous: the people group that originally inhabited a geographical location rather than having migrated or moved from somewhere else.

Orchestra: a group of instrumentalists, mostly combining string, woodwind, brass and percussion sections playing a variety of music.

Learning Objective

Students will be able to identify the difference in look and timbre between native American style instruments and European style instruments.

Pre-Teach Overview

Start by playing this video for the class. Stop the video when appropriate to discuss the vocabulary terms.

- Identify which family of instrument is being played.
- Ask the students to name some instruments from the Orchestra that belong to each family. (Clarinet, flute, oboe for winds. Timpani, drums, xylophone for percussion. Violin, viola, cello, bass for strings etc…)
- What's different about indigenous instruments? What's similar?
- Which instrument from the video was their favorite?

You may want to pull up some orchestral music for them to compare to, such as the first movement of this piece.

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Instrument List

Violin

The violin is a string instrument which has four strings and is played with a bow. The strings are usually tuned to the notes G, D, A, and E. It is held between the left collar bone (near the shoulder) and the chin. Different notes are made by fingering (pressing on the strings) with the left hand while bowing with the right. Unlike guitar, it has no frets or other markers on the fingerboard.

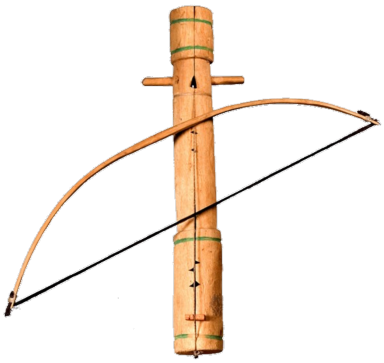
The violin is the smallest and highest pitched string instrument typically used in western music. A person who plays the violin is called a violinist. A person who makes or repairs violins is called a luthier.

Mescalero Apache Fiddle

Mescalero, from mescal, a food derived from the agave or century plant and an important part of their diet. Apache comes from the Zuni Apachu, or "enemy." The Apache call themselves Ndee, or Dine'e, "the People."

Location The Mescalero traditionally lived from east of the Rio Grande to the Pecos and beyond to the west Texas plains. The Mescalero Reservation is located in southeast New Mexico, northeast of Alamogordo.

Population Perhaps 3,000 Mescaleros lived in the region prior to contact with non-natives. Of roughly 25,000 Apaches nationwide in 1990, 3,500, including Chiricahua, Mescalero, and Lipan Apaches, lived on the Mescalero Reservation; several hundred lived off-reservation.



Timpani

Timpani (sometimes called kettle drums) are drums that are made out of large bowls that are usually made of copper shaped by craftsmen, which after being tuned, have a skin-like material stretched over the top. This material used to be a type of vellum or treated skin, but modern drums use a synthetic material. This top section is known as the "drumhead". Timpani is an Italian word. It is also a plural of the word timpano. However timpano is rarely used in informal English. More often, a timpano is referred to as a drum, a timpani, or simply a timp. Someone who plays a timpani is called a "timpanist".

Frame Drum

The frame drum is any hand-held drum with a head stretched over a round frame. Examples include: Bendir, Bodhrán, Daf, Ghaval, Pandero, Riq, Tar and Timbrel, to name a few.

Traditionally, the drumhead is made of rawhide, but there are some great vegan-friendly, synthetic alternatives these days (yay!). The frame is also called the 'shell' and is constructed of wood including rosewood, oak, ash etc, or plywood or man-made.

The frame drum is one of the world's most ancient musical instruments, having been used for thousands of years in spiritual ceremonies by shamans and high-priestesses. Practically every country has its own version, but its earliest depictions were found in Mesopotamia (Middle East) c.3000-6000 BCE ~ making the frame drum probably the first drum ever invented!

Courting Flute

The Native American flute is a flute that is held in front of the person playing it, has open holes for the player's fingers, and has two separate parts: one for the breath of the person playing the flute and another that makes the sound of the flute.

The player breathes into one end of the flute. A block on the outside of the flute directs the player's breath from the first part to the second part, causing air to vibrate in the second part. The vibration causes a steady resonance of air in the second part that creates sound.

Oboe

An oboe is a woodwind instrument with a double reed. It looks very similar to the clarinet, and may be confused with it. While the clarinet's shape remains cylindrical, the oboe's body is conical. The sounds produced by clarinets and oboes are very different. An oboe's sound is produced by blowing air through the double reed at the upper end of the instrument which forces the two reeds to vibrate together which produces the sound. The oboe has four parts: the bell, lower joint, upper joint, and the reed. A person that plays the oboe is called an oboist. A typical orchestra may have two oboes but sometimes three. Sometimes there is also a cor anglais which sounds a fifth lower than the oboe.

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American Indigenous Instruments (Strings Family)

Key Topics: Instruments, Native American Culture, Compare and Contrast	**Grade:** 1-5
Materials: • Laptop/Projector • Link to Mescalero Apache Fiddle and Violin • Instrument List Handout & Matching Game Handout (Strings)	**Length:** 25-30 min

State Standards: Grades K-5 Fine Arts & Social Studies
FA 2.4.3.a, FA 2.4.3.c, FA 2.4.3.d, FA 5.4.3.c, FA 5.4.3.d
SS 1.3.4a, SS 1.3.4.b, SS 1.4.3.c, SS 3.4.2.a, SS 5.4.2.b

Vocabulary

Mescalero Apache Fiddle: (meh-skuh-leh-row) single-stringed instrument made from hollowed vegetal stalk and various sinew.
Classical Violin: 16th century four-stringed European instrument made from hollowed hardwoods of many varieties.
Agave: (uh-ga-vay) a species of succulent plant with many narrow spiny leaves and tall spikes.
Timbre: the character or quality of a musical sound that's not pitch or loudness.

Learning Objective

Students will be able to identify the difference in look and timbre (tam-br) between Indigenous Native American style instruments and European style instruments.

Lesson Opener

Start by playing a short sample from this video (stop at 30s) followed by a sample from this video (stop at 30s).

- Which did you think was the classical violin?
- What are some differences in how they sound?
- What do you think each instrument is used for?

The students may be confused by what they're hearing in the second video; play again if needed.

Open this page and discuss the Mescalero Apache Fiddle.

- Why do you think the Indigenous people made this instead of a classical violin?
- Can you see the influence of the classical violin on the Apache Fiddle?

Guideposts

- Ask the students to think about "classical" or "European" music. What's different about the indigenous music culture vs. our modern music?

Teaching

Mini Lesson Pre-Teach: Music appreciation and musical color. Every instrument has a unique color (or **timbre** pronounced **tam-br**) to it. Here is a video you can show to help explain this concept. Discuss the following:

- What makes instruments sound different from each other?
- What color do you think of when you hear each instrument?
- What is your favorite instrument?

Objective: Open the links from the "materials" section and begin to show the students pictures of both instruments.

- Ask the students about the physical differences between the instruments.
- Which instrument looks easier to play?
- Discuss how each instrument is made, show this link for the classical violin and this link for the Apache Fiddle.

Influence: As Spanish missionaries moved into the western world, they brought instruments with them. These 'classical' instruments influenced 'similar' instruments throughout Indigenous culture.

- Discuss what other instruments the students think may have influenced one another.
- Play one of the pieces from this page and discuss what they sound like compared to modern day classical or pop music.
- How did culture influence the **timbre** of each instrument?

♦ You could bring in some non-classical instruments for show and tell. Frame drums, rattles, maracas, etc...

♦ Do we still hear some of these influences today? Are there any popular songs that have a classical or indigenous twist to them?

Activity

It's time to see what the students remember. Print out a copy of the 'strings matching game' for each student. These could be completed individually or in groups depending on the class.

Lesson Closer

Go over the matching game in class to see how each student did. Revisit each of the words from the sheet to reinforce knowledge.

- You could ask the students if they have an instrument from their heritage that they could bring in or describe.
- Suggest that the students go home and ask their parents about the vocabulary words, to see which ones they know already.

Turn and Talk: Have the students turn to a classmate and share one new thing they learned about both instruments. Which is your favorite?

♦ Have you ever seen a concert with non-classical instruments? Share your experience, ask the students the same.

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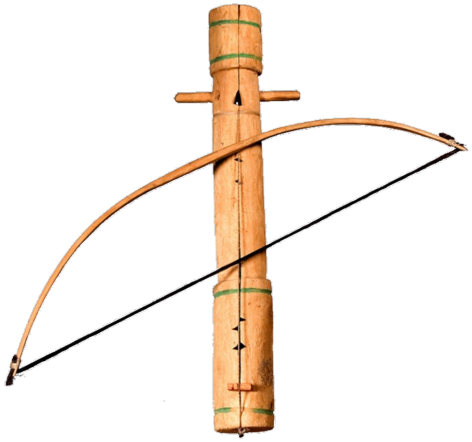
Strings Matching Game

Draw a line from the words to the instrument they describe.

Words	Instruments
1. Apache Fiddle	
2. Made from Hard Woods	
3. 1-String	
4. Orchestral	
5. Indigenous Instrument	
6. Classical Violin	
7. 4-Strings	
8. European	
9. Made from Plant Material	

TEACHER COPY

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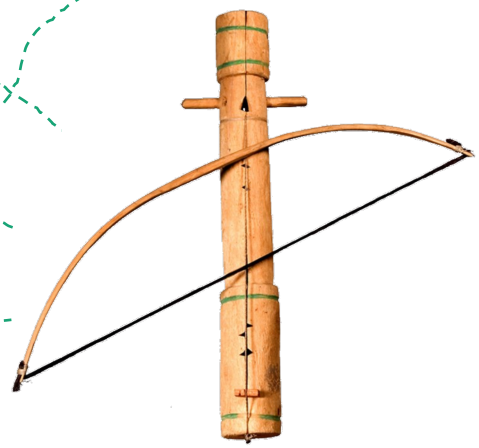
Strings Matching Game

Draw a line from the words to the instrument they describe.

Words	Instruments

1. Apache Fiddle
2. Made from Hard Woods
3. 1-String
4. Orchestral
5. Indigenous Instrument
6. Classical Violin
7. 4-Strings
8. European
9. Made from Plant Material

2, 4, 6, 7, 8



1, 3, 5, 9

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American Indigenous Instruments (Percussion Family)

Key Topics: Instruments, Native American Culture, Compare and Contrast	**Grade:** 1-5
Materials: • Laptop/Projector • Link to Frame Drum and Timpani • Instrument List Handout & Drawing Drums	**Length:** 25-30 min

State Standards: Grades K-5 Fine Arts & Social Studies
FA 2.4.3.a, FA 2.4.3.c, FA 2.4.3.d, FA 5.4.3.c, FA 5.4.3.d
SS 1.3.4a, SS 1.3.4.b, SS 1.4.3.c, SS 3.4.2.a, SS 5.4.2.b

Vocabulary

Frame Drum: a drum that has a drumhead width greater than its depth. Likely one of the first drums ever made. Usually a rawhide head stretched over a round wooden frame.
Timpani: (tim-puh-nee) large pitched drums with a rounded bowl like shape (also called kettledrums). Played mostly in an Orchestra.
Rawhide: hide or animal skin that has not been exposed to tanning. Usually buffalo, deer, elk, or cattle.
Rhythm: regular repeated patterns of beats, sounds, activity, or movements.

Learning Objective

Students will be able to identify the difference in rhythm and sound between classical works and indigenous Native American works of music.

Lesson Opener

Start by playing this video about the timpani and ask the following questions:

- Have you heard this instrument before? If so, where?
- What is the shell made out of?
- What is the head made out of?

Follow by playing this video about the frame drum and asking the following questions:

- What's different about this drum from the other drum?
- Which one looks easier to play?
- Have you ever played this drum?
- Do you think the frame drum influenced the timpani?

Guideposts

- Ask the students what their favorite part of music is? Melody? Rhythm? Harmony? Often with younger students it's the 'beat' or 'rhythm.' Ask them why that is?

Teaching

Mini Lesson Pre-Teach: Often rhythm and beat are confused with one another. Start by watching this video that will help explain the difference. Discuss the following:

- What are some non-musical things that have a rhythm? Class? Morning routine? Walking?
- Give other examples of beat vs. rhythm.
- How does beat and rhythm influence your world?

Objective: Open the link for the frame drum and timpani and share history, construction, and uses with the class.

- Discuss the physical differences between the instruments. What are they made of? How do they sound?
- Which instrument is easier to hear the rhythm on?
- Which instrument's sound lasts longer after it's been struck?

Influence: It's likely that the frame drum was the basis for the drums that influenced the creation of the timpani. Discuss this link with the class.

- Did percussion change with more intricate rhythms? Did rhythms influence how percussion instruments were used?
- Why do you think the timpani was invented?
- Play one of the pieces from this page. What are some of the differences in sound and rhythm compared to modern day music?

♦ Ask the class if anyone thinks they have 'good' rhythm. You could ask them to demonstrate if they're feeling brave.

♦ What would life be like without rhythm? Too chaotic or too boring? See how long the students can sit quietly for 15s. After, ask them if they naturally saw or heard rhythm.

Activity

Pass out the 'Drawing Drums' handout. The students can draw themselves playing the two drums. Bonus points for adding cultural items to their drawings.

Lesson Closer

Ask if any student is willing to get up and share their drawing. Ask them what their favorite drum is. As they are sharing, re-visit the vocabulary words using their drawings.

- Ask the students if they have ever seen a frame drum or timpani live; if so, where?
- Go home and share the experience with parents. Ask them if they've ever seen a frame drum or timpani played live.

Turn and Talk: If there is time left in the lesson, have the students turn and talk to each other about the lesson. Have them share some of their takeaways and favorite parts.

♦ Have you ever attended an orchestral concert? If so, which one? Share this experience with the students. What kind of drums were there?

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Drawing Sheet

Draw yourself playing a frame drum and timpani!

Frame Drum	Timpani

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Drawing Sheet

Draw yourself playing a frame drum and timpani!

Frame Drum	Timpani

OMAHA SYMPHONY

American Indigenous Instruments (Wind Family)

Key Topics: Instruments, Native American Culture, Compare and Contrast	**Grade:** 1-5
Materials: • Laptop/Projector • Link to Courting Flute and Oboe • Instrument List Handout & 'Make a Pan Flute' Handout	**Length:** 35-40 min

State Standards: Grades K-5 Fine Arts & Social Studies
FA 2.4.3.a, FA 2.4.3.c, FA 2.4.3.d, FA 5.4.3.c, FA 5.4.3.d
SS 1.3.4a, SS 1.3.4.b, SS 1.4.3.c, SS 3.4.2.a, SS 5.4.2.b

Vocabulary

Courting Flute: a Native American flute carved and hollowed from various materials including wood, plant, and pipestone. Adorned with various paints, metals, and carvings. Typically six fingerholes.
Oboe: The oboe is a type of double reed woodwind instrument. Oboes are usually made of wood, but may also be made of synthetic materials, such as plastic, resin, or hybrid composites. Typically 23 fingerholes.
Reed: A reed is a thin strip of material that vibrates to produce a sound on a musical instrument.
Melody: a group of pitches in rhythm. Think forward.
Harmony: a group of pitches in chords. Think vertically.

Learning Objective

Students will be able to identify the difference in melody and overall harmonic sounds between classical works and Indigenous Native American works of music.

Lesson Opener	Guideposts
Play this video for the students showcasing a classical piece played by woodwinds. Ignore the French horn. I'm sure they got lost and were adopted by the wind group. • Have you heard music like this before? If so, where? • Do you think this music is easy or difficult to play? • Which instrument from the video looked the coolest?	♦ Ask if anyone if they can whistle. Note similarities in sound.
Play this video for the students showcasing a courting flute piece. • How is the sound of this instrument different from its classical counterparts? • Would this music work on any of the classical instruments? • What's different about the music?	♦ Does the music paint a picture of an elk? Have the students describe what they heard.

Teaching

Mini Lesson Pre-Teach: The difference between melody and harmony can be confusing. Play this video for the class and then discuss the following:

- Ask the students to share some of their favorite melodies. Share yours as well.
- Ask the students if they had heard the word 'harmony' before and if they knew what it was.
- Of the instrument examples played beforehand, which one had harmony?

♦ Ask the students if they've ever heard a group sing 'happy birthday.' Was it good or bad harmony?

Objective: Open the link for the Courting Flute and Oboe for the class. Share history, construction, and anything else you find interesting. Discuss the following:

- Discuss the physical differences between the instruments. What are they made of? How do they sound?
- Play this video for the oboe. Compare it to the sound of the courting flute video from earlier. Which one is easier to hear melody on?
- Would the courting flute sound good with harmony?

♦ Explore rhythm, harmony, and melody more in depth with the Melvin the Explorer Digital Concert.

Turn and Talk: Have the students turn to one another and discuss some of the new things they learned about the instruments and musical terms. Have the students discuss some of their favorite music to see if they can remember any of the harmony from it. If there is time left, student groups can stand up and share what they discussed.

♦ Walk around and join a conversation or two. Add your ideas to the students conversation.

Activity

Have the students make the paper/straw pan flutes from this link.

Lesson Closer

Put the students into groups of three or four and ask them to write a short 10s song using their pan flutes. Have the students perform their group songs for the class. After, revisit the instruments and vocabulary words.

- Have you seen or heard either of the instruments before? If so, where?
- Go home and ask your parents if they've seen or heard either instrument.
- Ask your parents what their favorite melody is.
- Does your family have traditional or generational songs that you sing?

♦ Remind the students to be mindful while they're listening to music. They may hear wind instruments in more popular music.

HARMONY AND THE THREE SISTERS

LESSON PLANS

The Properties of Popcorn

Personifying Plants

The Flavor Star

HANDOUTS & ACTIVITIES

Popcorn Science

Legend of the 3 Sisters

The Three Sisters

Companion Planting

The Flavor Star

What's Your Flavor?

Agricultural Traditions of Native North American Nations

Recipes Using the Three Sisters

The Properties of Popcorn!

Key Topics: Science, Culinary Arts, Agriculture	**Grade/Age:** Grades 2-7
Materials: • *Popcorn Science* handout (1 per student) • ½ cup unpopped popcorn (or more if you want to make enough for the whole class to eat) • Kitchen scale • Measuring cup with measurement markings (ideally, transparent or translucent enough to see what's inside) • Large bowl • If popping popcorn on stove: Pot with lid, oil • If popping popcorn in microwave: Glass bowl with ceramic plate that forms a cover or other large microwavable container that has a lid with a vent	**Time Needed:** 1 hour

Relevant State Standards:
Grades 2 & 5: Structure and Properties of Matter
SC.2.3.1.E Construct an argument with evidence that some changes caused by heating or cooling can be reversed and some cannot.
SC.5.3.1 Gather, analyze, and communicate evidence of structure and properties of matter.
SC.5.3.1.B Measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total weight of matter is conserved.
SC.7.3.1.C Develop a model that predicts and describes changes in particle motion, temperature, and state of a pure substance when thermal energy is added or removed.

Notes to facilitator

This lesson can be a precursor to our culinary arts lesson about the Flavor Star! You can use the popcorn you pop during this activity as the medium for tasting different flavors when you conduct the Flavor Star taste test.

Vocabulary

Weight: A measurement of how heavy something is.
Volume: The amount of space that something occupies.

Learning Objective

Students will be able to explain the changes in both weight and volume that take place when a popcorn kernel is popped.

Lesson Opener	Checks for Understanding
Kick off the lesson with some discussion questions that provoke thought: • Which *weighs* more: a brick or a pillow? • Which has more *volume*? If your students are well acquainted with weight and volume already, you may ask them a question they likely know less about: Why does popcorn pop?	Let students consider this question: Can all corn pop? What about a can of sweet

Teaching/Modeling ("I do")

Show students the popcorn kernels and ask them to share what they already know about popcorn. Then, refer to our *Popcorn Science* handout. Ask students: What new information have we learned? Do we want to make any changes to our predictions?

Then, introduce or review the difference between weight and volume.

- Weight is how heavy something is. Volume is the amount of space something occupies.
- A corn kernel has a very small weight and a very small volume because it is tiny! A popcorn kernel is made up, like everything else in the world, of matter. Matter is any physical substance. All of us are made of matter, too.

Next, introduce or review the conservation of matter.

- One very important rule of matter is that matter cannot be created or destroyed, only moved around. So nothing can just disappear from the earth, the matter has to move around and disperse to new places.

Check for understanding and ask students to make predictions about popping popcorn.

- What does it mean that matter cannot be destroyed and can only be transferred?
- What does that mean in regard to our popcorn kernels? What will happen to them when we pop them?

corn? If we put sweet corn on the stove, will it pop? (No, it will just roast. This is because it is not the same kind of corn.)

Guided Practice ("We do")

Together, weigh 1/2 cup of kernels.

- Get the weight in grams. Use a standard kitchen scale and zero (or "tare") the scale so it does not include the weight of the measuring cup.
- Next, find the volume of the kernels. Use the measuring cup (This volume is just 1/2 cup, because measuring cups measure volume already.)

Write the weight and volume you find on the board or have students record them. This way, students can compare these measurements to the ones they will make later.

Next, pop the popcorn.

- On a stove or portable burner: Add 3-4 tablespoons of oil to a pot. Add one kernel to the pot. When this kernel pops, you can add the rest of the kernels. Keep the lid on while popcorn pops. Shake the pot constantly to not burn any kernels. If the popcorn fills the pot, collect the popcorn in a bowl and continue popping the rest of the unpopped popcorn.
- In the microwave: Place popcorn in the microwaveable container and cover it. Microwave for 2-4 minutes, listening for pops to slow down. Remove it from the microwave when there are 1-2 seconds between pops.

Encourage students to use their senses to make observations: What are you seeing, smelling, feeling, and hearing while the popcorn pops? If you pop the popcorn on the stove, they may be able to watch steam escaping, which will serve as a clue later on.

Now, gather measurements of the popped popcorn.

- Weigh the popped popcorn on the kitchen scale in grams (Don't forget to tare the scale when weighing things in a bowl or cup.)
- Find the volume of the popped popcorn**:** Using the measuring cup, measure the popcorn in cups

Guide students in examining the data they collected. They will find that the volume changed, and so did the weight. Present students with some questions:

- How did the volume change? Why? Does this follow what we have learned about volume?
- How did the weight change? Does this follow what we learned about matter?
    - How can the popcorn weigh less when it is popped? We learned that matter cannot disappear, something must happen to it. What matter was transferred? Where was it transferred to, and how?

Adjust the focus of this discussion to your class's grade level by using some of the suggestions from the "Extensions" section at the bottom of this lesson plan.

Independent Practice ("You do")

Challenge students to figure out why the weight changed, despite the fact that matter must be conserved. You can encourage students to revisit the *Popcorn Science* handout - this resource contains the missing piece of the puzzle: Steam escapes from the kernels when popcorn pops!

Finally, have students summarize the activity by answering the following question with a few written sentences:

- What did you predict? Why did you make that prediction?
- What happened? Was it different from what you predicted? Why did it happen?

Lesson Closure

For a quick, non-verbal review, ask students to point up or down to show their answer to these questions:

- Does the *volume* of popcorn kernels go up or down when they pop?
- Does the *weight* of popcorn kernels go up or down when they pop?

Lesson Extension: Use extra time to dive deeper

- Introduce the interaction between thermal energy and particle motion by having students make more detailed predictions about what happens when popcorn pops. Students can use sequential comics to express their understanding of the chain of events that occurs when we pop popcorn.
- For younger students, ask them about how the matter has changed and whether this change is reversible. Why not?
- Using the data gathered, have students calculate what percentage of weight the kernels lost when they popped, and the percentage increase in volume. Have them apply this data to predict the change for different amounts of popcorn, or even use the data to work backwards from a desired final weight or volume. For example: We would need *X* cups (or pints, gallons, etc, depending on desired complexity) of popped popcorn to fill our classroom. How many cups of unpopped popcorn would that be?

Watch for students who hesitate out of confusion between *weight* and *volume*.

Personifying Plants

Key Topics: Agriculture, Writing, Native American Culture	**Grade/Age:** Grades 1-5
Materials: For each student: • *The Three Sisters* companion planting handout • *Legend of the 3 Sisters* story handout • *Companion Planting* handout	**Time Needed:** 30-60 minutes

Relevant State Standards:
Grades 1-5: Modes of Writing | Write in a variety of modes for a variety of purposes and audiences across disciplines.
LA.1.W.3 With prompting and support, write personal or fictional creative and/or expressive pieces that retell two or more appropriately sequenced events.
LA.2.W.3 Write personal or fictional narratives that retell two or more appropriately sequenced events.
LA.3.W.3, LA.4.W.3, LA.5.W.3 Write creative and/or expressive pieces that describe a well-developed event or experience.

Vocabulary

Personification: A figure of speech where the writer describes an inanimate object, plant, or animal as having human-like features or behaviors. It can also mean that a writer represents something non-human as if it were human, like the Three Sisters are represented as actual people in the Haudenosaunee legend.

Companion Planting: The practice of planting different plants together to benefit each other.

Learning Objective

Students will be able to use personification to write a story about plants that benefit from companion planting.

Lesson Opener

Access background knowledge and establish a personal connection with one of these discussion questions:

- How do the members of your family help each other? What special skills or talents do they use to help?
- How do the members of your school or classroom community help each other? What qualities can you use to help your classmates?

Teaching/Modeling ("I do")

If your students have not yet been introduced to the concept of Three Sisters companion planting, introduce this first. You can use our included resource, *The Three Sisters,* and/or the description below.

- Some plants can help each other when planted together. The practice of growing different plants together to allow them to help each other is called *companion planting*. Many Native American nations have a long history of companion planting. One special method of companion planting is the *Three Sisters*. In the *Three Sisters*, corn, squash, and beans are planted together. The tall, strong Sister Corn provides support for the beans. The beans grow on a vine that needs to wrap around something to climb and grow. Sister

Notes

You could also have students begin this discussion by sharing a special quality, skill, or talent that they have.

Younger students may benefit from watching the teacher draw the Three Sisters while explaining the role of each plant. This can draw attention to each plant and give students a visualization for how the plants

Bean provides extra nitrogen to the other sisters, helping them grow abundantly. Sister Squash shades the roots of her companions, keeping the soil moist, and keeps pests away with her spiky stems. All three sisters work together to help each other grow and produce healthy food for their community.

grow simultaneously.

Make a Connection!

You can draw a parallel to the Lakota students' quartets by comparing the **harmony** of the instruments to the **harmony** of the Three Sisters: The cello, like the corn, provides the rhythm and serves as the backbone of the pieces. The solo violin, like the beans, dances around the rhythm. The squash, like the viola and second violin, round out the trio by filling out the overall sound of the music.

To introduce students to the idea of personification, first read the story included in our resource *Legend of the 3 Sisters*.

- Ask students to consider how the story represents the plants as people. For example:
  - How does what the characters *do* match the roles the plants play in companion planting?
  - How does the way characters *look* represent the plants they were based on?
- Explain that the Haudenosaunee nation, who originated this version of the legend, used *personification* to tell a story about the plants. Ask students to predict what *personification* might mean based on what they read in the story. If they need a hint, point out the presence of the word "person" within the larger word *personification.*

Consider reading and discussing the story and its elements before introducing the new vocabulary word, *personification*. This allows you to establish context for the word, which creates a stronger foundation for student understanding and retention.

Guided Practice ("We do")

After students make predictions, reveal the definition of personification:

- Personification is a figure of speech where the writer describes an inanimate object, plant, or animal as having human-like features or behaviors. It can also mean that a writer represents something non-human as if it were human, like the Three Sisters are represented as actual people in the Haudenosaunee legend.

Next, read and identify personification in the following examples. Challenge students to figure out what is being personified. Ask them to explain their reasoning - how did the author personify something that was not human?

- *The sun smiled down on us this morning.*
- *The shadows crept up the road.*
- *The cold wind bit at my cheeks.*

You could also give some examples of stories that center around a personified character. Ask students: How is personification used in these stories? Were the creators successful in using this tool to bring more meaning to the story?

- *The Giving Tree* by Shel Silverstein
- The nursery rhyme *Hey Diddle Diddle*
- *The Day the Crayons Quit by Drew Daywalt*
- *A Little Spot of Emotion* series by Diane Alber
- *The Dark* by Lemony Snicket
- *Inside Out*, the film from Disney/Pixar

For a stronger personal connection, consider pulling examples from stories your students have already written, or from pieces of text that you know they enjoy.

Independent Practice ("You do")

Now, you can challenge your students to write a story personifying their own chosen companion plants!

Students can use our resource *Companion Planting* to choose two plants that could benefit from being grown together, then write a story where they personify those plants.

Our *Companion Planting* resource is also a matching activity. You can add this activity into this part of the lesson, do it at another time beforehand, or simply use the handout as-is.

Don't forget to provide an

Lesson Closure	opportunity for retrieval practice! Ask students to recall and use the word *personification* as they introduce their story or sentence.
Students may share their stories by reading them to the class or to a partner. Alternatively, you can conduct a quicker closer activity by asking students to share just one sentence from their story that exemplifies personification.	
Lesson Extension: Use extra time to dive deeper	
• Ask students to name stories they've read that show personification. If you've read a story with the class that serves as a good example, challenge them to figure out what story they've read with you that utilized this writing technique. • Connect to Omaha Symphony's quartet recordings by asking students to describe the music by personifying the instruments. For example, *the violin dances around the rhythm of the cello.* • Make connections to this lesson throughout other writing activities. Point out when a student has used the technique in their writing and refer back to this lesson and *The Three Sisters*.	

The Flavor Star

Key Topics: Culinary Arts, Flavors, Local Food	**Grade/Age:** All ages
Materials: • Popcorn (about 1 cup per student) • Paper cups or bowls (1 per student, to hold their popcorn) • Plates, bowls, or paper towels (1 per student, to allow students to sprinkle seasoning on a few pieces of popcorn separately from the rest, and to catch the excess seasoning and reduce mess) • Seasonings: Salt, lime salt (or lime juice), sugar, chile powder, and cinnamon (Either in small shakers or in small bowls with spoons for sprinkling over popcorn. You will need enough sets of these seasonings for each group if students will remain stationary.) • *What's Your Flavor?* Handout (1 per student) • *Flavor Star* Handout (projected or as a handout - 1 per student)	**Time Needed:** ~60 minutes **Relevant Links:** Cooksmarts' Study of Flavor Profiles

Notes to facilitator

Be sure to allow for set up and clean up time when teaching this lesson. Popcorn can be store-bought or popped ahead of time.

Vocabulary

Flavor: The way that something tastes. There are five basic flavors that can be combined to create a flavor profile: Salty/umami, sweet, sour, bitter, and spicy.
Enhance: To improve or increase something. According to the flavor star, some flavors enhance one another.
Balance: To counteract or make neutral. Contrary to enhancing each other, some flavors balance each other instead.

Learning Objective

Students will be able to identify the flavor they are eating and explain which flavors enhance and/or balance out one another.

Lesson Opener	Notes
Use a simple movement activity to allow students to share their opinions on this question: Which type of popcorn do you prefer, cheesy popcorn or caramel popcorn? Have students move to one side of the room if they choose cheesy, and to the other side if they choose caramel. • Ask students on either side to describe how the type of popcorn they chose tastes.	Consider writing students' descriptors on the board to reference later.
Teaching/Modeling ("I do")	
Ask students if they know what flavor is. It's the way something tastes! Then introduce the five flavors of the flavor star: salty/umami, sweet, sour, bitter, and spicy.	Refer to Cooksmarts' Study of Flavor Profiles to learn more about the different flavors

- Ask students to give examples of different foods that have these flavors. For foods that contain many ingredients, ask students what ingredient creates that flavor in the dish. For example: If a student noted that a piece of cake is sweet, you may ask them - *What ingredient in the cake provides that sweet flavor?*

Next, introduce students to the Flavor Star.

- Discuss the flavor relationships using the flavor star. Some flavors *enhance* one another while other flavors *balance* one another.
- Ask students to think of a food combination they like that is a flavor combination like chocolate and popcorn or fruit with tajin. Which flavors are they combining, and how do those flavors interact?

Make a Connection!

Just like the **harmony** created by the instruments in the quartets, combining different flavors can produce **harmony** of flavor! Try revisiting this word throughout the lesson by asking students whether the flavors they try create harmony.
What other flavor combinations do they know that taste *harmonious* together?

and how to use them in your cooking.

Guided Practice ("We do")

Now, students get to perform a taste test!

Older or more independent classes could perform the taste test by visiting stations around the room (individually or in pairs) for each seasoning. Alternatively, students could be divided into groups, remaining stationary. In this case, each group will need their own set of seasonings.

If you want to emphasize discussion during this activity, you may prefer for groups to be stationary so that the entire class can try each flavor at the same time.

As students try each flavor on their popcorn, they will fill out the corresponding boxes on our *What's Your Flavor?* handout. Students may identify which of the five flavors they are tasting and give it a rating. The teacher can pause throughout the activity to elicit discussion.

- *Sour: lime salt*
- *Sweet: sugar*
- *Bitter: cinnamon*
- *Spicy: chile powder*
- *Salty/Umami: salt*

Connect to math concepts by graphing the rating for each flavor or calculating the average rating for each flavor.

Independent Practice ("You do")

Once students have tasted each flavor, they can try mixing flavors. Students can fill out the last two rows on the *What's Your Flavor?* handout on their own.

- For cinnamon & sugar as well as lime salt & chile powder, students identify what flavors they are tasting and give the combination a rating.
- After identifying and rating the combinations, bring students together and ask them to consider whether the two flavors in each combination *enhanced* each other or *balanced* each other. Encourage students to reference the Flavor Star if they're stumped.
- Students can also share their ratings for each flavor and flavor combination. Which flavors create a sense of *harmony* together?

Lesson Closure

Provide an opportunity for retrieval practice and review:

- Which seasoning represented which flavor? For example: What flavor was the chile powder?
- Which flavors balance each other?

- Which flavors enhance each other?
- What was their favorite flavor or flavor combination?

Lesson Extension: Use extra time to dive deeper

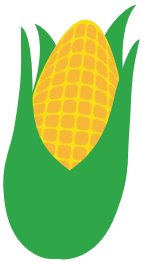
- Allow students to try more original flavor combinations and discuss their thoughts on the flavors.
- Do a taste test of other foods and identify the flavors.
- Practice solving kitchen mistakes: If your food is too salty, how could you balance it? How could you enhance spicy food?
- Introduce more seasonings or seasoning blends as a greater challenge to identify flavors. Look at the ingredients of seasoning blends to gather clues about what flavors you're tasting!

DOES EVERY TYPE OF CORN POP?

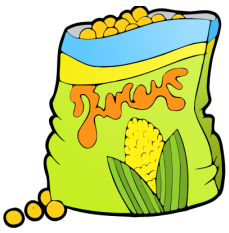
Source: USDA

SWEET CORN ✗

DENT CORN ✗



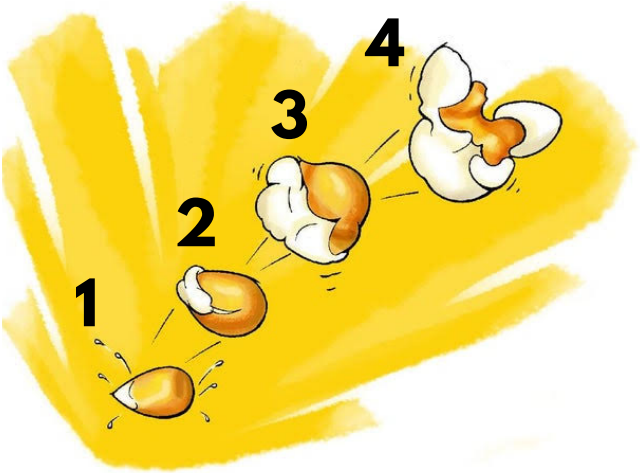
FLINT CORN ✗



POPCORN ✓

WHY DOES POPCORN POP?

Photo Credit and Source: Scientific American



1. A popcorn kernel is made of mostly starch and water.

2. The water in the kernel reaches critical heat at 356°F and bursts open.

3. Escaping steam creates a POP!

4. A fraction of a second later, your popcorn is ready to eat!

WHAT MAKES POPCORN PERFECT FOR POPPING?

Popcorn pops so well because its outer shell or hull is not too thin or too thick!

The hull is the yellow part of popcorn that can get stuck in your teeth!

LEGEND OF THE 3 SISTERS

HAUDENOSAUNEE VERSION

A long time ago, there were three sisters who lived in a field. The youngest was very small and could not walk yet so she crawled along the ground (squash). She was dressed in green. The middle sister wore a yellow dress and ran up and down the field (beans). The oldest sister stood up tall and bent with the wind (corn). Her hair was long and yellow and she wore a green shawl. The 3 sisters were very close with one another and loved each other very much.

One day a boy, that knew the way of the land, came to the field. He could talk with the birds and the animals and was fearless. The 3 sisters were interested in this boy as they watched him use his tools and hunt.

Late into the summer, the youngest of the sisters went missing, after the boy had visited the field. The other two sisters mourned here until the fall.

The boy returned to the field to gather reeds that grew at the edge of a small stream to make arrows with. The remaining sisters again watched him in fascination.

That night, the second sister went missing.

Now only the eldest sister remained. She mourned the absence of her two sisters and wondered how she would live alone in the field without them. As the days got shorter and colder her hair became tangled and dry and her shawl began to fade. Every night and day she cried out for her sisters but her cries came out as whispers and were drowned out by the wind. No one heard her calls.

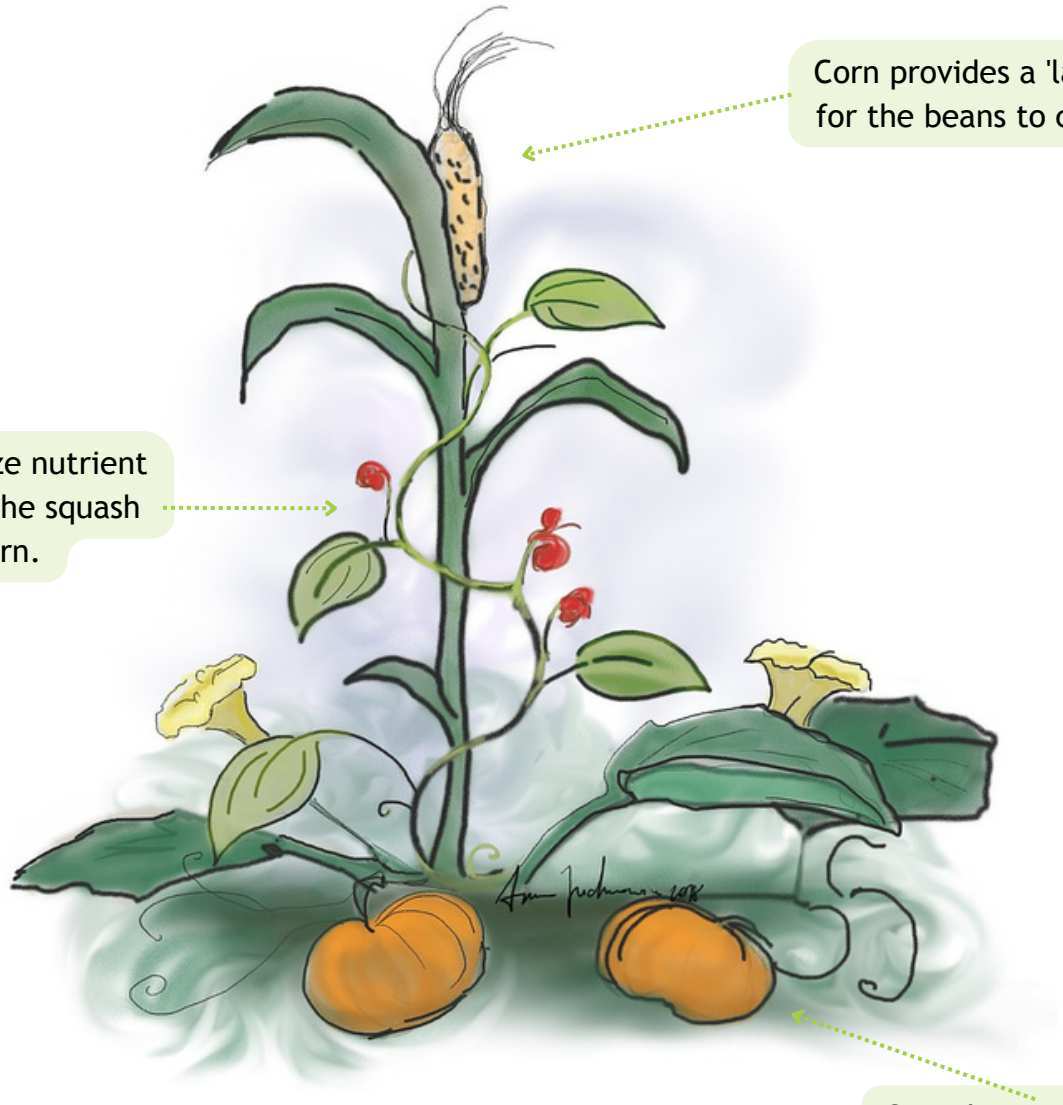
During the harvest, the boy heard the oldest sister crying. He felt sorry for her. He picked her up and carried her to his home. There a surprise waited for her, it was her sisters waiting there for her in the lodge! They were safe and glad to be reunited. They told the oldest sister that they had been curious about the boy and had followed him to his home. They had decided to stay because winter was close and his home was so warm.

The sisters made themselves useful to the boy and his family. They made sure to stick around through the winter and kept the family fed.

Photo and story adapted from:
oneidaindiannation.com/the-legend-of-the-three-sisters/

The Three Sisters
of Indigenous American Agriculture

Some plants can help each other when planted together. This is called companion planting. Many Native American nations have a long history of companion planting. One special method of companion planting is the Three Sisters. In the Three Sisters, corn, squash, and beans are planted together. The tall, strong Sister Corn provides support for the beans. The beans grow on a vine that needs to wrap around something to climb and grow. Sister Bean provides extra nitrogen to the other sisters, helping them grow abundantly. Sister Squash shades the roots of her companions, keeping the soil moist, and keeps pests away with her spiky stems. All three sisters work together to help each other grow and produce healthy food for their community.



Companion Planting

Match the plants together below to find companion plants that work well together.

When different crops are planted close together, it is natural for the plants and their properties to affect each other. Gardeners or farmers who plant certain crops together on purpose are utilizing a technique called companion planting.

SQUASH

Squash need pollinators in order to produce.

LETTUCE

Lettuce is a cool season crop that likes cool weather and shade from the sun.

SWEET ALYSSUM

Alyssum attracts hover flies. Hover flies kill aphids.

DILL

Dill is a flowering herb that attracts pollinators.

POLE BEANS

Pole beans are climbing vines that cling onto surfaces to grow towards the sun.

CORN

Corn grows vertically and has a tall, sturdy stalk.

TOMATOES

Tomatoes grow tall and can provide shade for other plants.

SWISS CHARD

Swiss chard is a target for aphids which can destroy the plant.

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What's Your Flavor?

Use this infographic from the experts at Cooksmarts to figure out which flavors balance each other out, and which ones enhance each other!

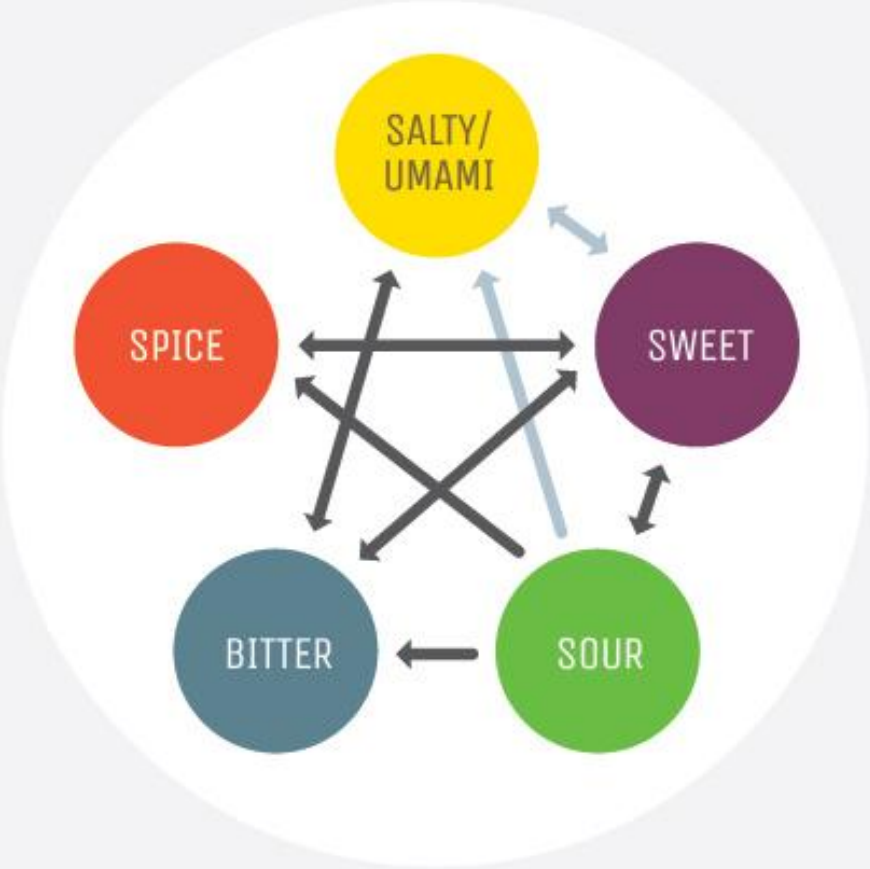
THE FLAVOR STAR

ENHANCES

Brings out the other flavor

BALANCES

Counteracts the other flavor. If your dish is experiencing too much of one flavor, use a balancing flavor to level it out.



WHAT'S YOUR FLAVOR ?

POPCORN FLAVORS TASTE TEST

Spice	What flavor(s) are you tasting	Your rating (1-5)
Kosher Salt		
Cinnamon		
Sugar		
Lime Salt		
Chile Powder		
Spice combination		
Cinnamon + Sugar		
Lime Salt + Chile Powder		

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Traditional Agricultural Practices of Native North American Nations

Discover traditional agricultural practices utilized by native peoples. Write the name of the nations that utilize these practices on the blank lines.

CULTURAL BURNING

The practice of clearing and burning areas of vegetation (often grassland) to replenish the soil and grow food.

_____

_____

_____

SEAWEED GATHERING

The practice of growing and harvesting seaweed from the ocean.

_____

_____

_____

TERRACING

The practice of constructing edges and channels in hills or sloping ground.

_____

_____

_____

IRRIGATION

The practice of collecting and delivering water to crops to provide moisture in regions that lack adequate rainfall.

_____

_____

_____

HUNTING

The practice of pursuing and killing wildlife with various weapons.

_____

_____

_____

COMPANION PLANTING

The practice of planting two or more crops together that enhance the growth and health of the companion crop.

_____

_____

_____

FORAGING

The practice of searching for and collecting fungi, herbs, berries, and other foods in the wilderness.

_____

_____

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COMMUNITY EDUCATION

THREE SISTERS
BEANS & SQUASH HOMINY BOWL

INGREDIENTS

- ½ cup dried hominy OR use 2 cups of canned hominy
- ½ cup dried brown Tepary beans OR substitute Navy or Great Northern beans
- 1 small, unpeeled acorn squash (about 1 1/4 pounds), halved, seeds and membranes scraped away, then cut into 1-inch chunks
- 3 Tablespoons sunflower oil Coarse sea salt 1 small yellow onion, halved and thinly sliced
- 1 Tablespoon New Mexico Hatch chile powder or any mild smoked red chile powder
- 2 teaspoons chopped fresh sage Smoked sea salt
- ½ cup chopped dark greens, such as dandelion greens, kale or spinach

PREPARATION

1. Place the hominy and tepary beans in separate medium bowls. Add enough water to each to cover the beans by 4 inches, and soak overnight at room temperature.
2. About 3 hours before serving, drain the hominy and the beans and place them in separate 3- to 4-quart pots. Add enough cool water to cover the hominy and tepary beans by 4 inches. Set each over high heat, bring to a boil, then lower the heat and simmer gently, stirring occasionally and skimming any foam that rises to the surface, until tender, about 1 1/2 to 2 hours. Reserve 2/3 cup of the cooking liquid from each pot (for 1 1/3 cups liquid). Drain the hominy and the beans and set aside.
3. Meanwhile, prepare the squash: Heat the oven to 425 degrees. On a parchment-lined rimmed baking sheet, toss the squash with 1 Tablespoon oil and a pinch of coarse sea salt. Arrange the squash in an even layer and roast until golden and very tender, stirring halfway through, 35 to 45 minutes.
4. In a large skillet, heat the remaining 2 Tablespoons oil over medium-high. Add the onion, chile powder, sage and a generous pinch of smoked salt and cook, stirring occasionally, until the onions are tender, 5 to 8 minutes. Add the reserved 1 1/3 cups cooking liquid and bring to a simmer.
5. Add the cooked hominy and beans to the skillet, then stir in the roasted squash and greens. Season to taste with coarse sea salt and serve.

Source: ltbbodawa-nsn.gov/wp-content/uploads/2022/02/Three-Sisters-Bowl-with-Hominy.pdf

COMMUNITY EDUCATION

THREE SISTERS STEW

INGREDIENTS

- 2 cups onions, diced
- 6 cups water
- 2 cans diced tomatoes, no salt added (14.5-oz. can)
- 6 cups red skinned potatoes, cubed
- 1 can tomato sauce, no salt added (15-oz. can)
- 1 cup corn, frozen
- 1 cup yellow squash, diced
- 1 can light red kidney beans, drained and rinsed (15.5-oz. can)
- 1 can black-eyed peas, drained and rinsed (15.5-oz. can)
- ½ can quick cooking barley 4 garlic cloves, minced
- 1 ½ teaspoon black pepper

PREPARATION

1. In a large stockpot, add all ingredients.
2. Bring to a boil, then lower heat and simmer for 30-45 minutes until the potatoes are soft.
3. Serve immediately.

Source: https://www.chickasaw.net/Our-Nation/Culture/Foods/Three-Sisters-Stew.aspx

COMMUNITY EDUCATION

THREE SISTERS
CORN CASSEROLE

INGREDIENTS

- 1 pint sour cream (use low fat or fat free if you wish)
- 2 eggs, beaten 2 tablespoons butter, melted
- 1 cup yellow cornmeal
- 1 t. ground cumin
- 1 t. salt ¼ t. ground pepper
- 16 oz. frozen whole kernel corn
- 1 ½ – 2 cups cooked pinto beans (or canned, drained and rinsed)
- 3-4 cups summer squash, diced (about 1 pound)
- 8 oz. Monterey Jack cheese, diced small(may use reduced fat)
- *1/4 cup Jalapeno peppers, diced (optional – if you like the heat!)

PREPARATION

1. Vegetable oil spray In a large mixing bowl, mix sour cream and eggs together.
2. Add butter, cornmeal, cumin, salt & pepper and mix well.
3. Add remaining ingredients and mix.
4. Spray a baking pan or casserole dish with vegetable oil spray and fill with mixture.
5. Bake at 350 degrees for 45 minutes until golden brown.

Source: https://www.potawatomi.org/blog/2014/05/02/the-three-sisters-recipes/