9-12th Lesson Guide: Squash

Vocabulary:

- Turkey
- Seed Saving
- Navajo Hubbard Squash
- Navajo Cushaw Squash
- Long Walk
- Harvesting
- Tradition
- Tail
- Round
- Food

Engage:

- Read *The Story of Squash: From Creation to Survival* together as a class.
- Explain that these are sacred stories, passed down since time immemorial, and that they carry deep lessons about our people, culture, and survival. They remind us how food is more than just nourishment; it connects us to our history and our future.
- As you listen, write down the key parts of the story that stand out to you. You'll be using your notes later in the lesson to develop your own children's book.

Explore and Explain:

- Activity 1: Create Your Mini Book
    - Quick Discussion:
        - What makes Turkey heroic in your eyes?
        - Why were the seeds so important to the Navajo people?
        - How can we adequately tell this story to younger children?
    - Materials:
        - One piece of printer paper
        - Scissors
        - Coloring pencils/crayons
    - Use the following link to show students how to fold their 8-page mini book.
    - After folding the mini book, have students think about the most notes they took earlier. From those notes, have students create a mini book that reflects the most important parts of the story to them.
    - Then, have them share their mini books in a group or class setting if time allows.
    - *Optional:* If your school is K-12, have your students share their book with a younger student.
- Activity 2: The Importance of Seed Preservation (pdf.)
- Activity 3: Squash Production in the United States (pdf.)

Elaborate:

- Watch the following video about Traditional Ecological Knowledge (TEK), which shares the wisdom tribes have passed down about how the land, plants, animals, and people are interconnected.
- As you watch, think about how these ideas connect to *The Story of Squash* and what they teach us about caring for seeds, food, and the land throughout time.
- After viewing, write down one idea that stood out to you and one question you have. Reflect on how hearing this video first might have changed the way you told the story in your children's book project.
- Discuss in small groups:
    - How might your mini book or story be different if you had seen this video first?
    - How do TEK principles (like caring for seeds, land, and community) appear in the story, and how could you highlight them in your book?
    - Why is it important for people today to understand TEK alongside traditional stories?
    - If you were to add one page or section to your mini book inspired by TEK, what would it be and why? Create that one page.

Evaluate:

- Gallery Walk & Peer Feedback
    - Students display their revised mini page around the classroom.
    - During the gallery walk:
        - Have students vote on two pages that effectively integrate TEK and cultural lessons.
        - Students should write one thoughtful comment about what stood out and one question that encourages deeper thinking about TEK and The Story of Squash.

Suggested Lesson Activities:

- Indigenous Vocabulary
- Create a Mini Book
- Importance of Seed Preservation
- Squash Production in the United States

Additional Educator Resources:

- Indigenous Squash Varieties (ppx)
- USDA Plant Genetic Resources Unit – Squash Production
- SNAP-Ed Seasonal Produce Guide – Winter Squash
- Oklahoma State University – Squash and Pumpkin Production
- American Indian Health & Diet Project – Squash
- Native Seeds/SEARCH – Southwest Traditional Squash
- AgMRC – Squash Production
- Inside the Doomsday Vault
- 346 Million Tons Of Squash Are Harvested In America This Way

- Two-Eyed Seeing: Science and Traditional Ecological Knowledge | California Academy of Sciences
- California Academy of Science

Squash

For Grades 9-12: Please feel free to modify these lessons as needed to fit your students' needs.

The Story of Squash: From Creation to Survival

Nadine Peterson, Freeman Yazzie, and Dorothy Martinez lovingly shared this story with us. We thank them and their families for carrying these memories and teachings forward. Their words remind us that food is not only for the body but also for the heart, the spirit, and the strength of our people.

Long ago, before this world, our people lived in the Fourth World — the White World. When it came time to emerge into the Fifth World, the Glittering World we live in today, Turkey carried something precious in its wings: seeds. Hidden, tucked safely beneath its feathers, these seeds held the promise of life.

When Turkey arrived, he saw that the new world lacked food. With a shake of his wings, the seeds scattered across the earth. From them grew squash, corn, and beans, which would nourish generations. Squash gave not only its flesh for eating but also its seeds, which could be saved, replanted, and shared endlessly. Its shell, once hardened, became tools like ladles, cups, and rattles used in healing and blessing ceremonies. It was more than food; it was medicine, tradition, and survival.

Our elders tell us that squash itself once spoke to the people. It said: *"If you eat me, you will never starve. I will protect you. I will fill you, wherever you go."* Squash became known as a protection food and a gift of resilience.

This gift carried our people through one of the darkest times in history: the Long Walk of 1863. When the U.S. Army forced the Navajo to march hundreds of miles to Fort Sumner, women followed the example of Turkey. They sewed seeds into their clothing, hiding them away. Once at the barren camp, only a small portion grew, but it was enough. They planted, harvested, and ate in secret, keeping their families alive. For the people, squash was more than nutrition; it tasted like home. It carried the memory of the land they were taken from and gave them strength to endure.

Even after returning in 1868, squash remained a reminder of survival. Families passed down seeds as carefully as stories, saving them year after year. Elders taught children to harvest squash by hand and to store it beneath beds wrapped in cloth, where it would last through the long winter months. It was survival but also ceremony, feeding both body and spirit.

Today, the tradition continues. Families still plant Navajo squash, saving its heirloom seeds. Farmers share their harvest with neighbors, just as their ancestors did. The shells still become cups, rattles, and tools for ceremony. And each seed still carries that ancient promise: no matter what challenges arise, the people will endure.

The story of squash is not only about food. It is about survival, adaptation, and identity. Squash remains one of the original gifts, sacred, enduring, and alive. From Turkey's wings in the Glittering World to the Long Walk, to today's gardens, squash has been there quietly teaching resilience. With every harvest, we remember.

Navajo Squash: Growing Strong and Giving Back

Imagine long, twisting squash vines stretching across a sunlit garden, their colorful fruits spilling across the soil or hanging from their stems. For generations, the Navajo people have carefully cultivated and preserved these special squashes, maintaining the plants and the cultural practices and traditions surrounding them. Squash begins as a small seed, which grows into vigorous vines with broad, green leaves. Bright yellow flowers bloom along the stems, relying on bees and other pollinators for reproduction. Squash can be divided into two main types: summer squash, harvested while the skin is tender, and winter squash, which matures with a hard rind that allows it to be stored for months. The Navajo people grow unique types of distinct shapes and colors among these varieties. The Navajo Hubbard squash is large and round, sometimes slightly elongated, with skin ranging from green-blue to dark green, light pink, or orange, with sweet orange flesh inside. The Navajo Cushaw squash is distinguished by its long, curved neck and striking green-and-white striped skin, with creamy to light orange flesh. After pollination, the female flowers swell into mature squash, ready to be harvested when firm. The Navajo people, alongside farmers and gardeners, have long practiced seed saving – carefully selecting the healthiest and most productive fruits to plant the following season. This practice ensures the survival and improvement of these varieties across generations. Like other squashes, Navajo varieties can be baked, boiled, dried, or added to soups, thriving best in sunny soil with ample water and space to grow.

Figure 1: The Navajo Hubbard Squash

Traditional Ecological Knowledge (TEK)

Traditional Ecological Knowledge, or TEK, is the wisdom and understanding that Native peoples have developed over generations about the natural world and the relationships between people, plants, animals, and the environment. TEK is learned through observation, experience, and cultural practices, and it is passed down from one generation to the next. It emphasizes that everything in an ecosystem is connected and that humans have important roles and responsibilities.

Storytelling is one of the primary ways that TEK is shared. *The Story of Squash: From Creation to Survival* is more than a story; it is a vessel for cultural knowledge. Through the tale of Turkey, seeds, and the journey of squash, generations of Navajo people have communicated lessons about caring for the land, preserving seeds, and understanding the cycles of life. The story teaches practical lessons, like which squash varieties to save and how to tend the plants, and deeper values about community, responsibility, and sustainability. In this way, storytelling becomes a form of TEK, connecting cultural knowledge with ecological understanding and guiding both present and future generations in living harmoniously with the environment.

Traditional Ecological Knowledge is woven into many stories passed down through generations, sharing lessons about the land, plants, animals, and how people live in balance with their environment.

From Farm to Table: Squash Across the United States

Squash is a significant agricultural crop in the United States, cultivated across a diverse range of farming operations. In 2023, the nation produced approximately 6.03 million hundredweight (cwt) of squash, encompassing both summer and winter varieties. This production was valued at around $215 million, with a substantial portion directed to the fresh market. The leading squash-producing states include Michigan, California, Florida, New York, Georgia, Oregon, and North Carolina, each contributing notably to the national output. For instance, Florida alone produced 847,400 cwt of squash in 2023, valued at nearly $45 million.

Figure 2: The inside of the Navajo Hubbard Squash

The cultivation of squash varies between large-scale commercial farms and smaller, family-run operations. Large farms typically employ advanced agricultural techniques, such as crop rotation, pest management, and irrigation systems, to maximize yield and efficiency. In contrast, smaller farms often focus on sustainable practices, emphasizing soil health and biodiversity. Tribal communities, including the Navajo people, continue cultivating traditional squash varieties like the Navajo Hubbard and Cushaw. These varieties are valued for their unique flavors and textures, cultural significance, and adaptability.

Figure 3: The Navajo Hubbard Squash harvested for cooking (stews, pies, etc.)

A key practice among these growers is seed saving, which involves selecting and preserving seeds from the best-performing plants to ensure the next generation of crops. This practice is deeply rooted in TEK, which encompasses understanding and managing the environment based on generations of experience. TEK emphasizes the interconnectedness of all living things and the importance of maintaining biodiversity. By saving seeds and cultivating a diverse range of squash varieties, these communities contribute to agricultural resilience and sustainability.

Squash serves multiple roles in American agriculture: it provides fresh, nutritious food for local communities, supports regional economies, and preserves cultural heritage. Its versatility in cooking, from baking and boiling to drying and adding to soups, demonstrates its enduring value as a practical and historically significant food. The cultivation and consumption of squash across the country illustrate the interplay between science, culture, and ecological knowledge, showing how traditional practices continue to inform modern agriculture.

North American Squash Varieties and Their Origins

Many squash varieties were developed by tribes, and they are often referred to as "heirloom" or "heritage" varieties. Squash was an important part of a special way of planting called the Three Sisters. Native American tribes grew squash, corn, and beans together because they helped each other grow and gave people a healthy mix of food.

Acoma Pumpkin

Grown by the Acoma Pueblo in New Mexico, this is a distinct variety of pumpkin.

Connecticut Field Pumpkin

This type of pumpkin was cultivated by Native Americans in the Northeast long before European arrival.

Cushaw

This large, striped, and often curved squash was grown by many Native American groups, including southern and Southwestern tribes. The Navajo Cushaw is also known as “tail squash.”

Delicata

Though its precise origins are unclear, the original delicata squash is believed to have been an heirloom variety grown by Native Americans in the U.S.

Gete Okosomin

Gete Okosomin: The “Cool Old Squash”

The Minom people have been growing this squash for thousands of years. In the Manomi language, its name means “cool old squash” or “big old squash.”

The Myth: Some people once believed the seeds were found inside an 800-year-old clay ball during a dig in Wisconsin in 2008. They thought the seeds were planted and grew into squash again.

The Truth: That story isn’t true. The Miami Nation saved and cared for the seeds for many generations. They ensured the squash stayed strong and healthy by hand-pollinating and saving seeds yearly. In the 1990s, the Miami Nation gave some seeds to a professor at the University of Wisconsin, which helped more people learn about and grow this special squash.

Hidatsa

This squash variety was developed by the Hidatsa people, a Native American tribe of the Great Plains. The Hidatsa winter squash is an heirloom variety originally cultivated by the Hidatsa people in what is now North Dakota. A type of Cucurbita maxima, it is a winter squash known for its sweet, fine-grained, orange flesh and long storage life.

Long Island Cheese

Though now known as a Long Island heirloom, this pumpkin-like winter squash is believed to have descended from squashes grown by tribes.

Seminole Squash/ Seminole Pumpkin

A traditional variety from the Seminole people of Florida. This tan, pear-shaped squash is especially resilient to heat, humidity, and pests.

Thelma Sanders Sweet Potato Squash

A winter squash heirloom that sets the standard for acorn squash. This variety, along with other winter squashes, was domesticated by Native Americans from indigenous squash types.

Tohono O'odham Ha:l

This variety is associated with the Tohono O'odham people of the Sonoran Desert.

Student Name: _____ **Date:** _____

Importance of Seed Preservation

Instructions:

- Watch or read two documentary segments about seed banking and preservation techniques:
  - Native Seeds SEARCH Conservation Center Garden Tour and Seed Saving
  - Pueblo Seed Saving at Flowering Tree Permaculture Institute-Santa Clara Pueblo
  - Seed Conservation at Native Seeds SEARCH
  - Global Seed Vault becomes more important than ever as climate change threatens crops
- Write a two-paragraph analysis comparing ancient Indigenous seed preservation methods with contemporary conservation efforts.

Choose a Writing Prompt:

Option 1: You're designing a seed conservation program for the next century. Research how tribal communities have maintained crop varieties across generations and how modern seed banks operate today. Write two paragraphs proposing how traditional knowledge and contemporary science could be combined to create the most effective approach to preserving our agricultural heritage.

Option 2: Compare a specific tribal community's seed preservation practices to a modern conservation program (like the Svalbard Global Seed Vault). In two paragraphs, tell the story of how both approaches work to preserve genetic diversity and argue which method better serves both plants and people.

Activity 3

Student Name: _____ **Date:** _____

Squash Production Map

Use the following link: https://worldpopulationreview.com/state-rankings/squash-production-by-state to identify the states with the top squash production in the United States. After reviewing the data, color each state in on the map below:

By the Number

Use the following United States (US) Production Data (2019-2024) to answer the questions below:

National Statistics for Squash

Data Items	2024	2023	2022	2021	2020	2019
SQUASH - ACRES HARVESTED	37,600	40,100	42,600	43,400	42,700	44,500
SQUASH - ACRES PLANTED	39,200	41,800	44,400	45,200	44,700	45,900
SQUASH, PROCESSING - PRODUCTION, MEASURED IN $	20,998,000	15,684,000	13,210,000	14,742,000	13,705,000	14,783,000
SQUASH, PROCESSING, UTILIZED - PRODUCTION, MEASURED IN TONS	87,750	60,219	62,774	79,653	75,463	92,441

Figure 1: National statistics for squash production across the US via acres harvested/planted, production by dollar and by ton.

1. In 2024, how many acres of squash were planted in the US? _____
2. How many tons of squash were grown in 2022? _____
3. In 2021, how much money did squash production measure in the US? $_____
4. From 2019 – 2024, how many acres were collectively harvested in the US? $_____

TEACHER EXAMPLE

Indigenous Languages Vocabulary Sheet (9-12)

Directions:

- In Column 1, rewrite the word in English.
- In Column 2, rewrite the word in your own Native language (if available). If it's not available, you may use the Native language of a neighbor, friend, or community member.

Vocabulary Word	English Rewrite	Navajo Language Rewrite	Cherokee Language Rewrite
Turkey			
Seed saving			
Navajo Hubbard Squash		naayízí	watsigu (wa-jsee-goo) or waguga (wa-goo-gah) for Squash
Navajo Cushaw Squash		Táláwosh or naayízí tseíí (seed)	“
Long Walk			
Harvesting			
Tradition			
Tail		Atsee’	Ganidadv
Round		Názbąs (circle shaped)	Tsigi'a
Food		Ch'iyáán	ᎠᏁᏍᏓᏏᏰ (Alisdayvdi)

STUDENT WORKSHEET

Indigenous Languages Vocabulary Sheet (9-12)

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Seed saving			
Navajo Hubbard Squash			
Navajo Cushaw Squash			
Long Walk			
Harvesting			
Tradition			
Tail			
Round			
Food			