

Ethnoecology of Indigenous Foods: Re-learning our Local Food Systems
Improving Personal and Community Health through the Reconnection of Indigenous
Foods and Practices

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Author's Note

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Topic and Context

In this 9th grade project-based health curriculum unit, students at Summit High School will be answering the following question; How can reconnecting with traditional Indigenous foods and practices contribute to improved personal and community health and well-being?

Summit High School is a public alternative high school for grades 9-12 in Flagstaff, AZ, a part of the Flagstaff Unified School District (FUSD). Summit is located northeast of downtown Flagstaff and is the base of Mt. Elden. Mt. Elden is an extinct volcano and is of great cultural importance to the Indigenous people in this area. Mt. Elden is a part of the San Francisco Peaks (Dook'o'osłíid) range of sacred landscape and Ontological philosophy, which is made up of four sacred mountains, called "Shabikego" in the Diné language. Petroglyphs from the Sinagua people can be found on Mt. Elden's east side. Located just five miles to the northeast of campus is Elden Pueblo, or Pasiwvi. Elden Pueblo is a cultural village of the Hopi people believed to be inhabited and used as an important trade route from 1070 to 1275 AD. The elevation on campus is roughly 6940 feet.

Working off the traditional alternative learning setting approach, our school's vision statement is to "Empower every learner by cultivating positive pathways toward personal growth and success." Our core values that are at the route of our teaching methods are: Respect, Responsibility, Mindfulness, Resilience. I am proud to be a part of such a special team that has a mission statement that aligns with my personal values. Our mission statement is: At Summit High School, we create an inclusive and supportive environment where students are empowered to demonstrate respect, take responsibility, practice mindfulness, and build resilience for personal growth and success. I am in my second year as a teacher at Summit High School. Previous to Summit, I was the PE teacher at Kinsey Inquiry and Discovery School, a place-based magnet school in FUSD for nine years. I currently teach various Physical Education (PE) courses to students in grades 9-12, including Outdoor Fitness, Explore PE, and Personal Fitness and Wellness. I also teach Health and Wellness, which is a required course for Arizona High School graduation. Summit offers a myriad of electives for students to choose from throughout their tenure, and I have the pleasure of teaching Nutrition, Culinary, Student Success, and Career Exploration (also a high school requirement). All teachers create their individual curriculum using the following four goals: Goal 1: Engagement Through Student-Led Teams, Goal 2: Success Criteria and Learning Targets, Goal 3: Integrate School Values in Student Learning, Goal 4: Formative Assessments and Learning Progress

Summit features a block schedule where students have four 80-minute classes for 9 weeks, as well as a 30-minute advisory period. New to the 2025-2026 academic year, students will have the option of enrollment in a before and after school course to further allow for alternative options for learners. This structure allows for credit recovery, flexible schedules and differentiated instruction. Student enrollment averages around 110 students, allowing for small class sizes and more individual attention. Summit high school also offers a Teenage Parent Program (TAPP) which allows expecting or current mothers to continue their education while allowing for their child to come to school with them or receive on site care for their child through the early head start program. These students receive specific instruction such as courses in early childhood development and family studies.

Summit High School is considered a title I school, which means at least 75% of our students qualify for free or reduced lunch and are considered economically disadvantaged. 56% of students are Native American, 16% White, and 28% are Hispanic. We have a very diverse population, with majority of students beginning their high school Journey at Flagstaff High School or Coconino High School before transitioning to Summit.

In researching ideas for my curriculum, I knew I wanted to develop content for my Health and Wellness class, with the focus on a personal and community health issue related to the people living on or near the Navajo Nation. As a non-native woman, I think it is so important to always have a thirst for knowledge for a better understanding of the culture and traditions of the students who represent a majority of the population where I teach. Exploring Diné culture through food and public health is a topic that I believe would be of great interest to my students because many of them they have personal experiences in the topic. This could lead to a greater level of investment in this curriculum. I have a place-based approach to my teaching practices so incorporating a curriculum focused in our local environment while using Indigenous culture and traditions of food and culture fit in perfectly with my style of teaching. This curriculum style also incorporates the Arizona State Health Standards. In addition, I wanted to devise a topic that would serve as a bridge into the next focal point on my class.

Rationale

My curriculum unit topic is educating students on how to reconnect with traditional Indigenous food systems and practices (as well as introducing the topic to non-native students). This curriculum will be one component of the comprehensive unit that investigates the **physical health** element of the “health triangle” in a typical Arizona high school health course. A health triangle is a model that emphasizes the relationship between an individual’s physical, social, and mental/emotional health, and how the elements must be in balance for excellent overall health and wellness (Marshall, 2023). Below is an image of what the triangle looks like, and the specific content within each element is the basic structure of the typical high school course required for graduation in Arizona.



The state of Arizona bases its standards on the concepts and principals of each aspect of the health triangle. Through incorporating my curriculum on who how to improve both personal and community health through the reconnection of Indigenous food systems and practices, students will gain the required academic knowledge required for the successful completion of the course. The unit focuses heavily on strand one- Comprehension of Health Promotion and Disease

Prevention Concepts of the Arizona Department of Education Health Standards. Concepts in the curriculum will also meet requirements for all other health Strands and concepts, which are: Strand 2- Analyzing Influences, Strand 3- Access to Information, Strand 4- Interpersonal Communication, Strand 5- Decision Making Strand 6, Goal Setting, Strand 7- Self Management and Strand 8- Advocacy. The have traditional structured by Health course to follow the sequence of Physical health, Social Health, and finally delving into components of mental health. It is important to understand that various topics overlap, and many components are revisited throughout the span of the course. As stated above, the curriculum that I have developed falls mainly into the physical health element of the health triangle. However, I purposefully incorporated some concepts and activities of the following element of the triangle that we would be learning about; social and emotional health. The social element delves into the importance of building strong relationships with others and your community. As part of this curriculum, I wanted to be able to help aid students in developing the foundation of being a positive and contributing member of their community.

Through my summer residency experience as a student in the Ethnoecology of Indigenous Foods: Re-learning our Local Food Systems program, I attended an incredible seminar that was both professionally relatable and beneficial. The seminary was part of the 31st annual American Indian and Indigenous Teacher Education Conference (AIITEC). This year's theme was "empowering future generations" and I had the privilege of learning from Shawn Secatero (Canoncito Band of Navajo); Bernard Chimoni (Zuni); Crazy Thunder (Lakota); Marnita Chischilly (Navajo); Verlana Livingston (Navajo) who led the seminar entitled "Empowering our Indigenous Doctoral Journey through the Corn Pollen Model." This panel of University of New Mexico graduate students shared with the audience content from their dissertation on the Indigenous holistic based Corn Pollen Model way of leadership practices. The information that I received was so closely aligned with my Arizona Health standards, but more importantly it was culturally relevant to my students. I have been given the power of knowledge through the education of Indigenous leaders in the field, and now I have the ability to pass on the traditional ecological knowledge (TEK) that I learned to my students, many of whom are Native Americans. Adding curriculum that is culturally responsive into my Health class will help me raise cultural awareness while at the same time increase student engagement.

On the first day of class, I introduce the traditional health triangle as well as the Corn Pollen Holistic Leadership Model to my students. The corn Pollen model is derived from the Diné cultures and traditions and aims to create culturally responsive leaders. Similar to the traditional/western model which contains elements of physical, mental and social health, the Corn Pollen model includes an additional element of Spiritual health. As stated above, my course periods are 80 minutes long, so for the first week of class, I will introduce the physical element of the triangle as I always do. I will introduce my students to this curriculum at the conclusion of the week and begin the nutrition element of the course.

Students will learn what food sovereignty is in relation to the health and wellness of Indigenous communities located on or near the Navajo Nation. Students will explore the importance of cultural foods, traditional and sustainable practices, and the respect for nature and the land. Students will determine what the differences are between traditional and Indigenous foods. We will volunteer at the local food bank on every Tuesday of the semester (as part of both the social

and physical elements of Health), which will also allow us to procure foods to make. My class will also work closely with students enrolled in our Service-Learning course to maintain and harvest items from our school garden. Students will explore the traditional food system through oral histories from in the community as a way of gaining understanding of the key components of how food is connected to their land, language, spiritual beliefs, and traditional beliefs. Students will embark on learning excursions to visit various traditional and medicinal gardens around Flagstaff, local greenhouses, and other Indigenous spaces to experience place-based practices.

In addition to learning about the ethnoecological approach to Indigenous foods, students will research why diabetes, obesity, and other chronic disease rates on the reservation and Bordertown areas are significantly higher than the national average. They will investigate why it is important to decolonize the food system in the Diné culture, and how they can help replace common processed foods with healthier Indigenous and local ingredients. Students will read informational text and hear from prominent Diné figures about Indigenous community's philosophy of food as medicine and how there are ingredients right outside their door that can be used to prevent illness and boost immune systems.

After students gain the knowledge of the aforementioned topics, students will be introduced to the main portion of my curriculum unit. For the remainder of the quarter, students will prepare local/traditional/Indigenous foods for our school community, which will be served on Fridays for the remainder of the quarter. Our school has a shortened schedule on Friday, so one of our school values is to do project-based activities and more hands-on projects to entice students to attend school on Friday (which is typically a poorly attended school day). By utilizing the traditional ecological knowledge (TEK), students will have the tools to select their own food/beverage/snack to their peers. To introduce students to this final part of the unit, I will lead them through a place-based lesson and activity where they will harvest wild rose hips from the school garden and prepare/use the hips in two different ways. This will show them an example of holistic approach to food and plants; how plants can be medicinal as well as nutritional. They will read and write about an Indigenous story about wild rose hips and then collectively we will create a rose hip recipe and informational text to share with the school community. The students will learn that I chose this "nutritional powerhouse" because of the antioxidants, anti-inflammatory properties, high vitamin C levels, but also considered the ethical harvest and consumption, and finally the cultural value of the plant. We will make a tea as well as an anti-aging facial mist (or face oil depending on budget and available items) from the entire rose hip fruit. This lesson will raise cultural awareness which will lead to a classroom discussion where students can share stories from their personal experiences with native plants, seeds, tools, etc. For example, I have experiences picking wild blackberries at the lake where I grew up on, named Owasco Lake, which is a Haudenosaunee (Iroquois) word for floating bridge. I was always told by my grandfather that I need to leave some berries for the deer that share our beautiful space. While this project will be much lengthier than subsequent weeks activities, it will allow time for students to grasp why we are engaging in this activity, and how important it is to reconnect with Indigenous food systems and practices, and their specific cultural background if different.

Through work in collaborative student led teams, students will work together to harvest or procure ingredients, prepare, and then serve the item to our school community. Each week, they will be tasked with researching and then making a food dish, beverage, or snack of their choice using one or more culturally significant plants, trees, seeds, or organism from our school garden or local food panty if relevant. These items will be nutrient rich (higher in complex carbs and low in fat) and void of additives or high in sugar, which will inspire healthier eating and a stronger immune system. Examples of things currently found in our school garden are: wild blackberry, corn, squash, rosemary, mint, chive, tomatillo, oregano, garlic, apple, zucchini, and green bean.

In preparation for serving students on Fridays, students will create a recipe and information card to hand out to those who sample our special treats. Students will be achieving proficiency in ELA standards of oral presentations, as well as meeting every health standard listed above!

Instructional Guide

The main purpose of this project is to cultivate Indigenous community's health and wellness through the application of an ethnoecological approach to Indigenous food systems and sovereignty. Students will learn from Diné community members how traditional food practices support the holistic well-being of our local Indigenous communities- not just physically, but also emotionally, culturally, spiritually, and socially. Students will have an opportunity to explore their own cultural relationships with food and analyzing the internal and external influences of food on personal health and disease prevention.

Lesson Plan Outline with alignment of Arizona state standards in parathesis and italics. In addition to directly aligning with the Arizona Health standards, this curriculum also aligns with 9-12 Diné Culture and Character-Building Standards, as well as aligning with the Culturally Responsive Assessment of Indigenous Schooling model (CRAIS). This curriculum will focus heavily on the Diné Culture and Character Building Standard Concept 1, PO1 (I will use my life skills to be a responsible citizen) PO2 (I will coordinate a plan to show respect to the environment) and Concept 2, PO1- I will model Diné teaching in my daily life). Several topics listed in the CRAIS model that can be seen in a high degree (+3) are: Traditional and/or cultural knowledge is included, Local/regional Indigenous community is reflected, Models critical thinking about historical narratives and contemporary status quo, and Recognition that local/regional Indigenous context is specific and unique, as are other contexts.

- 1- Physical Health element of Health Triangle (*Strand 1 concepts 1-3*)
- 2- Intro to Corn Pollen Model (*Strand 1 concepts 1-3, 6. Strand 7 concept 1*)
- 3- Garden and Summit HS Scavenger Hunt with the Service-Learning class (*strand 7 concepts 1-2, strand 8 concepts 1-3*)
- 4- What is Food Sovereignty (*strand 2 concepts 1-3*)
- 5- Cultural and Indigenous foods (*strand 5 concepts 1-2*)
- 6- Oral histories from Community Members- 1-2 elders from in and have discussion and activity with students (*strand 8 concepts 1-3*)

- 7- Community Outreach Quarterly project: Learning the value of accessible food systems (*strand 3 concepts 1-2, strand 8 concept 1-2*)
 - a. Weekly Trip to Assist with the Flagstaff Family Food Center
- 8- Community health concerns on and near the Navajo Nation reservation (*strand 2 concepts 1-3*)
- 9- Wild rose hips activity and reading (*strand 5 concepts 1-2*)
- 10- Weekly indigenous/cultural food project and distribution. Academic Teaming and food presentation project (*strand 4 concepts 1-3, strand 8 1-3*)

Teaching Plan

Explanation and lesson plans for curriculum outline:

- 1- Physical Health element of Health Triangle- Students will complete Health Triangle Assignment which is linked here: [../Health/HEALTH TRIANGLE ASSIGNMENT.pdf](https://www.flagstafffamilyfoodcenter.org/Health/HEALTH%20TRIANGLE%20ASSIGNMENT.pdf)
2. Intro to Corn Pollen Model- Additional spiritual health element includes cultural identity, linguistic expression, and artistic gifts. This holistic leadership model has 16 components that outline personal wellness and are wrapped up into the 4 pillars (mind, body, relations, and purpose)- For physical well-being, one of the components is honoring and respecting our environment and all living beings. By adhering to the corn pollen model, Dr. Secatero states, “Having the ability to heal yourself”, and this unit aims to empower students to do just this!

I will read the following excerpt from the book, *The Corn Pollen Model: A Holistic Pathway to Leadership, Education, and Well-Being*, written by Vincent Werito and Pedro Vallejo “Always remember who you are, where you are from, and where you are going in life. Create and continue your legacy by following the corn pollen path through education, well-being, and leadership.”

I will give students a copy of the corn pollen model, and on the other side of the paper they will get to write their legacy using the corn model principals. They will keep in mind that “The symbolic roots of the corn serve as our spiritual connections to the earth through cultural, linguistic, and artistic well-being.” (Werito and Vallejo, 2022)

*Link to Reflective Writing Assignment [Reflective Writing Assignment](#)

3. Garden and Summit HS Scavenger Hunt with the Service Learning class- Students will work in academic teams to compete the garden and Summit grounds scavenger hunt. The objective is for students to familiarize themselves with what is in the garden and where to find useful things pertaining to this unit.

*Link to Garden Scavenger hunt [Scavenger Hunt Garden](#)

4. What is food Sovereignty? Lesson Objectives / Learning Targets: Students will be able to:
- Define food sovereignty and explain how it differs from food security.
 - Identify who controls food systems (local farmers, corporations, governments).
 - Analyze how food sovereignty connects to sustainability, culture, and justice.
 - Propose ways their community or school can support food sovereignty.
- a. Video from Albuquerque <https://www.youtube.com/watch?v=Bc7zvceVtel>
- b. Overview of Diné College Report on the Navajo Nation Food System and completion of Worksheet: <https://www.dinecollege.edu/wp-content/uploads/2025/01/dpi-food-sovereignty-report.pdf>

Food Sovereignty: Who Controls Our Food?

Grade: 9

Name: _____

Date: _____

Part 1 – Warm-Up: Think & Discuss

Answer in short sentences.

1. Where do most of your meals come from (home-cooked, cafeteria, fast food, etc.)?
→ _____
2. Who decides what foods are available in your community?
→ _____
3. Why do you think it's important to have control over where your food comes from?
→ _____

Part 2 – Vocabulary Match

Match the term with the correct definition.

Term	Definition
A. Food sovereignty	1. Having access to enough affordable, nutritious food.
B. Food security	2. The right of people to define and control their own food systems.
C. Sustainability	3. Meeting needs today without harming future generations.

Answer:

A → ____ B → ____ C → ____

Part 3 – Reflection

1. Food sovereignty means...

→ _____

2. One way I could support food sovereignty in my community is...

→ _____

5. Indigenous Foods Discussion and Video:

<https://www.youtube.com/watch?v=IY8YgkJMzY0>

Book Review: The Modern Navajo Kitchen- Homestyle Recipes that Celebrate the Flavors and Traditions of the Diné, written by Alana Yazzie.

- Pages 7-9- A general Overview of Navajo Food History. Class discussion: Precolonization vs. post colonization. What is your knowledge of the long walk (as described in the book)
- Pages 9-10- Navajo Cuisine in the Twenty-First Century. Class Discussion: Local trading posts, flea markets. What is Native Seed Search and how can we get involved?
- Page 128- Naadáá' Dootl'izhí Bááhkání Yázhí- Blue Corn Cupcakes. This was Ms. Yazzie's catalyst to finding new ways to use traditional Navajo ingredients, which became her most popular recipes in her food blog, "the Fancy Navajo", the precursor to her book. <https://thefancynavajo.com/2017/02/19/fancy-blue-corn-cupcakes/>
- Class distribution and recipe card

6. Oral histories from Community Members

-Audrey Bradley- Summit High School Native American Counselor.

Ya ateeh' shi' ei Audrey Bradley yinishye. Naashteezhi Tabahaa nishli Todachiini ba'shishchiin Ta' neez zahnii dashicheii Ashii' hii' da shinali

Greetings, my name is Audrey Bradley My clans are Zuni Edgewater born for bitterwater, my maternal grandfather is Tangle clan and my paternal grandfather is Salt.

Audrey will talk about traditional ecological knowledge and her experience with food and food sovereignty growing up on the reservation. She will talk about how information is being lost because younger students are not continuing traditional based on from elders. Class discussion on their experiences and thoughts. Audrey will bring in Navajo tea (cota) picked from her childhood home outside Tuba City. With her guidance, students will clean, bundle, bake, and boil tea for our students. On Friday (our early dismissal day), my health class will present the process and then offer the tea to students in 4 different Summit 1st period classes

7. Community Outreach project-

Learning the value of accessible food systems. Each Tuesday we will assist the Flagstaff Family Food center as part of our community service and outreach project . All students will visit the food bank distribution center 1st and 3rd Tuesday. Attend Kinsey Food Bank 2nd and 4th Tuesday. At the distribution center we create and fill produce bags. At Kinsey we distribute the produce bags to community members by loading them into vehicles.

8. Community health concerns on and near the Navajo Nation Reservation. Revisiting the Diné College published report: <https://www.dinecollege.edu/wp-content/uploads/2025/01/dpi-food-sovereignty-report.pdf>
 - a. Page 31, 39, 51

9. Rose Hips: Video and story: <https://nativememoryproject.org/plant/wild-rose/>

The Gift of the Wild Rose (Traditional Indigenous Story, Adapted)

Long ago, after the first snows fell, the people were hungry. The berries had dried on the bushes, and game was hard to find. The children cried with empty stomachs, and the elders sat in silence, remembering times when the land had been generous. One morning, a young woman walked far into the hills, asking the spirits for help. She stopped by a thicket of bare rose bushes, their blossoms long gone. “What can I tell my people?” she whispered. “There is nothing left to eat.”

The Spirit of the Wild Rose heard her prayer. The wind stirred, and a soft voice spoke from the thorny branches: “Do not look for beauty now. Look closer — beneath the thorns are small red berries. Take them gently. They are my gift to your people.” The young woman gathered the red hips carefully, thanking the plant. When she returned to her village, the elders crushed the rose hips into a warm tea. The people drank, and their strength returned. From that day on, they honored the wild rose — not only for its summer blossoms, but for the medicine it gives in the cold of winter.

- Students will then harvest the rose hips from our school garden, remove seeds and hairs, and then boil and make a tea. Students will create recipe card and go to 4 classrooms and present and offer the Rose Hip tea to the students.
10. Final Project- Students will be put into academic teams and will be tasked with creating a recipe using Indigenous ingredients, or 1-2 ingredients from our garden. They will create a recipe card and lead the rest of the class through the culinary experience of making the item/food and presented information on their chosen food. Each week (Wellness Wednesday activity) a different group will be in charge, and the other students will fill out the following sheet in response to the designated group’s presentation. The entire class will present and offer the item/food to the 4 classrooms on Friday. Below are four examples of what each group chose to make for their final project, including a drink from a group of Hispanic students.

Wellness Wednesday Activity- Applesauce!

Objective:

Learn how to use seasonal, local/native foods found in and around our garden to create a nutritious snack while understanding the health benefits and food preparation skills involved.

Your Task:

1. **Research** the nutritional content and potential health benefits of apples:

- Scientific Name: _____

- What nutrients are found in apples: _____

Fun Fact about apples:

Crab apple seeds contain a compound that can turn into cyanide in large amounts—but you'd have to eat a **huge number** of seeds for it to be harmful. Still, it's best to remove seeds when cooking!

Wellness Wednesday Activity- Baby Red Potatoes!

Objective:

Learn how to use seasonal, local/native foods found in and around our garden to create a nutritious snack or beverage while understanding the health benefits and food preparation skills involved.

Your Task:

1. **Research** the nutritional content and potential health benefits of eating baby red potatoes with ingredients from the garden!

- What are one or two ingredients that we can use from the garden?

- What are the health benefits of eating potatoes with these locally harvested ingredients? _____

Fun Fact: The anti-inflammatory properties found in chives' essential oils contribute to overall health, and research directly links chives to improved brain health

Wellness Wednesday Activity- Mint Agua Fresca!

Objective:

Learn how to use seasonal, local/native foods found in and around our garden to create a nutritious snack or beverage while understanding the health benefits and food preparation skills involved.

Your Task:

1. **Research** the nutritional content and potential health benefits of using wild mint in an Agua Fresca!

- What is Agua Fresca and what ethnicity is it?

- What are the health benefits of drinking Agua Fresca? And with mint?

Fun Fact: Currently, the U.S. produces 70% of the world's mint. It's named after the nymph Menthe in Greek mythology and has over 30 varieties!

Wellness Wednesday Activity- Caramel Apples!

Objective:

Learn how to use seasonal, local/native foods found in and around our garden to create a nutritious snack or beverage while understanding the health benefits and food preparation skills involved.

Your Task:

1. **Research** the nutritional content and potential health benefits of using organic apples from the garden to make caramel apples!

- What are the advantages of making your own caramel apples as opposed to store bought caramel?

- What are the health benefits of eating apples?

Fun Fact: The caramel sticks best when the apples are **chilled and wax-free** — grocery apples often have a wax coating that makes the caramel slide off! So use apples from a garden or local apple tree!

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