Seminar Title: Food and Health

Curriculum Unit Title: Four Foods of Hózhó

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Introduction

From the time of our return to Dinétah (Navajoland) our forefathers have used stories, prayers, and ceremony to reach, teach, and speak to our children and grandchildren about times of hardship and illness. Stories are said to speak of human resilience, survival and empowerment in facing the challenges of life. Stories are drawn from knowledge and wisdom. These teachings help us feel connected and hold powerful words bringing people back to hózhó and walk the path of balance and harmony. This technique is important because it remains our guide of source and strength through life. Diné people have changed their ways of life and walking away from the life we've known – understanding and knowledge of traditional strength and power. We need to get back to the wisdom and knowledge of traditional way of life for the stability of our existence. The Diné leaders continuously encourage our people to maintain a balanced lifestyle and to preserve the cultural teachings and traditional values. When focusing on Diné Health, collected data reveals diabetes is surging among adults and within the younger generation of <20 years age group. In 1930s, diabetes among Diné people did not exist. From1950-1980's, data indicates a rise in diabetes was not only among Native Americans, but also among non-Natives. From this data, the Diné people rated second highest to Pima tribe of Southern Arizona (Story, Evans, et al. 1991).

Diabetes is a condition that occurs with the blood glucose, also known as blood sugar levels being too high. Normally, the pancreas (an organ behind the stomach) releases insulin to help your body store and use the sugar and fat from the food you eat. Diabetes can occur when the pancreas produces very little or no insulin, or when the body does not respond appropriately to insulin. High blood glucose causes serious health problems and leads to other health issues including heart disease, nerve damage, eye problems, kidney disease, and obesity over time (WebMD 2005). There is no cure for diabetes, however, it can be cared for with weight control, nutrition, medication, and exercise.

Early Diné people lived a nomadic lifestyle based on the surrounding resources. They lived in remote areas requiring extensive traveling by walking, later, being introduced to horseback and wagons. They labored heavily on gardening and farming finding various methods like dry-farming and irrigating in harsh desert climates. Gardening provided staple foods of corn, melons, and squash. Sheep and wild game provided meat needed in their diet. Living sporadically from neighbors, they lived in hogans; a mud and log dwellings, with earthen floors. There was no electricity and running water, transportation was challenging either by foot, horses or wagon. Most home life impacted a healthy lifestyle. Grandparents' primary focus was sheep herding and farming which required rigorous work and cautioned young family members becoming "fat and lazy", advising them to keep busy. Many were discipline from the teaching of Early Dawn fitness (Hall, Hickey, Young, 1992).

When I was a young child, I was chased out of bed with my bedding to shake the laziness and being teased about the lazy Being (bił hastiin) who supposedly prevents you from waking up before dawn, this made me hurry out of bed. I meet the Early Dawn with an offering of white corn meal for good health and life's blessings, then I make my morning run to the East. Run means – you are running at an intense pace for strength and endurance – physically and mentally. My mother used to tell us this teaching became effective during the Kit Carson era. Some of our

ancestors out ran their enemies. When she said run, I ran fast! She would yell after me to not lose my thoughts and to only think positive, to hold my hands open to grasp the blessing sent upon me and shout aloud so the early morning deities hear me loud and clear. When I came back from running, I took out the sheep. While the sheep are grazing near I ate just enough to get by the day (t'óó bikiinígo). My meals included blue corn mush and a piece of tortilla with water or hot tea.

Thirty years later, Diné people are encountering health problems. As a result, communities are impacted by infectious diseases and emphasis to the people to make major changes in their lifestyle. One disease, among all others, is diabetes – obesity and type 2 diabetes. Modern transportation allowed easy access available foods, processed foods, and commodity foods rations. Practices of the sedentary ways and activity levels decreased drastically. Studies show Diné people were trimmer, led more active lifestyles. (T. Hall, M. Hickey, T. Young, 1992). The Western movement unfolded and electricity became essential, watching television and shopping centers disrupted the traditional lifestyle. Farming and ranching decreased for a wage economy, changing the behaviors of Diné people. As years passed, families transition from the old ways to adapt to society by seeking education and better paying jobs to fit in with the lifestyle.

It is crucial to teach prevention through school-based health education and programs about the disease and can be integrated through science standards. Empowering students to make healthy choices and being active will help with future health issues. Families need to get active in sharing their traditional foods and shift towards quality of food and not quantity.
The goal for this unit's curriculum for "Four Foods of Hózhó" is to bring educational awareness of healthy eating and building stronger communities. Communities where the language and culture is strong to pass these values from generation to generation. In addition, young generation need to remember the historical past, understand Diné stories (Hané) and utilize them to make connection to Diné traditional foods to regain or achieve hózhó. This unit will only highlight a small section of Diné philosophy of hózhó teaching and use it as a teaching strategy to articulate the idea of hózhó. Hózhó is unifying beauty, order, and harmony together in achieving balance- Si'a Nagha Bik'e Hózhó. Every aspect of our Diné life relates to the number four. It symbolizes the four essential elements, the four sacred plants and foods, the four sacred rivers, and the four sacred mountains - that designates the four cardinal directions and each colors, respectively.

Demographics

Kayenta Unified School District located in Kayenta, Arizona (Tó Dínéeshzhee'), and on the northeastern part of Arizona is within the Navajo reservation. The population is approximately 5,200. Student enrollment for Kayenta, PreK-12 is 1,814. I teach a fifth grade self-contained class at Kayenta Middle School, serving grades five to eight. There are five fifth grade classes with class sizes ranging between 22-28 students. Some of our students are bilingual. Ninety-nine percentage of students' population is Diné and 1% are non-Navajos. Fiscal year 2017-2018, my class consisted of 5 ELL, 4 ESS, and 1 foster student.

Rationale

The unit, "Four Foods of Hózhó," is designed to bring epidemic awareness of diabetic mellitus and the effects of obesity in most communities throughout the Navajo Nation. The focus is on the understanding of how traditional diet in the past played a vital role in most Diné people's livelihood to maintaining a balanced diet with vigorous daily activities for survival. One component will focus on traditional and edible food of Diné and the transitioning of modern dietary adaptations and dependence of secondary food sources. This shift has impeded the Diné's traditional diet, influencing a taste preference for sugar and salt from processed foods. As a result, diabetes emerged at a high rate across the Navajo Nation.

Our understanding of the serious health issues of diabetes facing the Navajo has a tragic history. In 1930, diabetes was once unnoticed among the Navajo (Salsbury 1937). Later in 1940-1950, when diabetes advanced, it was regarded as not life threatening. (Prosnitz and Mandell 1967). Unfortunately the concern was well established in regard to diabetes. Presently there has been significant attention of diabetes becoming evident — contributing to lifelong disabling conditions such as heart disease, amputations, blindness and renal failure.

Diabetes mellitus, a chronic disease is a growing concern for many Indigenous families in the United States. This chronic disease now impacts children 18 years-of-age and younger age group. Type 2 diabetes is found in one of every 359 Navajo youths age 15-19 (Yu and Zinman, 2007). Further, Indian health system is struggling to conform to the federal trust obligation in managing health care services with inadequate sources of funding. As a result, Indian Health Services (IHS) are exploring new avenues for health education in which IHS is supporting integration of indigenous cultural and community knowledge with diabetes mellitus. This endeavor opens doors to implementing a school-based diabetes health and science education (Story, Evans, et al. 1991).

Many students come from Diné traditional lifestyle and teachings, whose belief is to continue to learn and practice those traditional teachings and understanding about the land and respect it, because it defines our way of life. It is important to connect culture-based experiential learning and science-based learning to bring harmony to their culture.

Western philosophy education has opened our minds to a convenient way of disconnecting indigenous people from cultural roots. In essence, our Native foods and physical activity teaching have become unbalanced. For future generations, people need to seriously advocate for education by promoting healthy choices and regulating activities to restore and maintain respect for the younger generation. Such Diné teachings say not living in harmony with the universe develops an imbalance and may cause health issues.

The thought of what is happening to livelihood on earth fills me with sadness. I know I must do my part like the government and state entities to educate people on their health of the body.

With majority of the students being of the Diné Nation, integrating Diné History and Culture is important. The unit will orient students from their cultural knowledge basis to connect them through Navajo thought content. For instance, our Navajo elders strongly emphasize respect and knowledge for Mother Earth and Father Sky because of its sacredness. Oral teachings accentuate maintaining a balanced connection with our environment, by giving sacred offerings for

continued existence. Time has significantly changed from when our ancestors lived without electricity, by living off Mother Earth without endangering the environment by adapting to the changing condition for their survival. Today we have become dependent on electricity and running water. Western philosophy opened our minds to a convenient way of living. (Paulson, as cited in Náhasdzáán Níłchi Binaadohígíí - Carbon Dioxide, Shirley Paulson 2017).

For future generations, people need to learn to regulate their food intake and balance it with proper physical activities to restore and maintain respect for themselves. Otherwise, life with Type 1 diabetes begins to control your life. Our body needs sugar (glucose) for fuel. What we eat are broken down in to glucose. Then glucose gets into our bloodstream, where it is used by cells to for growth and energy. In order for glucose to get into most cells, insulin (sugar) must be present. (Insulin) is made in the pancreas. Insulin is a hormone enables the cells to process the sugar. Type 2 diabetes occurs when our bodies cannot take sugar out of the blood. This happens when your body stops being sensitive to insulin. Your blood vessel will become damage and you face major health threats. In order to stabilize blood sugar, you need to follow a meal plan, exercise regularly and consistently testing your blood sugar, and following up with your doctor on a regular basis. It is important to track your carbohydrates intake. Carbohydrates will fluctuate your blood sugar level (WebMD 2005).

One beautiful side of Diné way of life is knowing the connection to the teachings and to embrace our traditional teachings before European contact can restore health and affirm cultural identity. Prevention education starts with the youth. The loss of traditional foods and physical activities patterns are all woven into Diné culture. I feel by educating students with information and projects to home-produced fresh and dried foods will link nutrition directly to health. They will be more likely to make dietary changes that can sustain them. Inquiry-based learning opportunities include science, technology, engineering, mathematics, and outdoor exercise which offers hand-on learning activities that builds interrelationships among agriculture and community action.

Content

Pre-History Hane (Haigo Hane) Creation story of the emergence are told during the winter months. oral creation stories definitely do not have a single version and widely vary throughout the reservation, but in some way they are the same thing. For example, traditional prayers and songs may differ by generations and location. As we transition with modern day society, the stories also change.

First /Black World

In the First World, day and night was marked by white light from the east for early dawn, blue light was to the south representing a full day, yellow light to the west as evening arrives, and black to the north for night. At this time, there was no world, but only darkness. Various spiritual beings, certain insect and animals with given Diné names based on their description. They lived among Air-Spirited People. First World was also surrounded by four oceans and for and for each ocean lived a chief for the people. Words were heard and languages were identified. Various gems were identified to become languages, where words and sounds were uttered by a lonely

being. The beings couldn't get along with one another and the chief from each direction told them they were not welcome anymore and water began to rise so they decided to leave through an opening in the east into the Second World.

Second/Blue World

The beings circled upwards until they saw a blue head calling them. They entered the Blue World which was already occupied by bluebirds, animals and other things. They were members of the Swallow people. The Swallow people surrounded the newcomers. After one night the insect people began looking for land. They sent a plain and white locust to the east to look for people like them. Upon their return, they reported that they found no people, no plants, no rivers, and no mountains. Next two messengers were sent to the south and found nothing. They were then sent to the west, but returned after being told they reached the end of the world. Then the Swallow people asked if they were the only ones living in this world. They agreed to live among each other in harmony for twenty-three nights. On the twenty-fourth night, one of the insect people did a disorderly act dividing the village. They could not get along with one another. There was severe hardship, people were dying of hunger, and this determine them to leave the Second World. Everyone took flight through an opening in the south onto the Third World.

Third/ Yellow World

The beings circled upward and could not find an opening. Bluebird was the first to enter this world, but had no place to land. Suddenly a white face peered at them. It was the Wind. They heard him cry to them and lead them through the south opening. One by one they flew in. Here they found only Yellow Grasshopper People. They lived in yellow holes along the bank of the river. No one spoke and all were silent. Once the Yellow Grasshoppers left the newcomers made camp. The locust were sent out to explore to the east, to the south, to the west, and finally to the north. Each flight took two days and returned with the same report. They reported a full days flight only took them to a cliff that rose, but the people, plants, water, or mountains. From the cliff they could only find flat, yellow countryside with yellow grasshopper people. On the fourth journey two great chiefs came and asked why they sent messengers out. They reported that the messengers only found bare land. They agreed to live together and for twenty-three days they lived in harmony. On the twenty-fourth day one of the newcomers did wrong. The chief ordered them to leave. Here again, they took flight into the sky and circled around for some time before they got through the sky to the west.

Fourth/White World

With no purpose, a voice was heard and insect people noticed a red head (Niłch'ichíí' łichíí') peering out at them. They followed through a winding passage into the west entrance of the Fourth World. Fourth World was not like the other underworlds, it was black and white. The sky changed white, blue, yellow, and black just like the other world, and alternated its colors. First World, each color lasted in same length of time. Second World, blue and black lasted about the same, while white and yellow did too. Fourth World had no sun, moon or stars. There was no life, but in the distance they noticed four snow covered peaks along the horizon around them. One peak was to the south, one to the east, one to the west, and one to the north. The two

messengers were sent out to travel east, for two days they could not reach the peak. They return only to report they did not detect any life, tracks or trails. This was also the same report for the west peak, but messengers sent out to travel to the south had a different report. They were able to find deer and turkey tracks. The messengers sent to the north reported they met a strange race. They were people who had their hair cut straight in front and lived in underground dwellings. They were harvesting when they met them and they were fed food. Today, these people are known as the Kiis'áanii (People Who Live in Upright Houses). They lived together in one village and begin to call each other's as father and son, mother and daughter, grandparent and grandchild, and brother and sister. The land was dry with very little rain or snow, but they knew how to manage the soil to make things grow. Twenty-three days passed, the newcomers met and ordered everyone not to do anything to create disorder among the people. Twenty-four days passed and the world was good so they said they were met to stay. In late autumn, they heard a voice in the distance. The voice came closer and soon they were standing among four mysterious being. These people came to be known as the holy people. With this, there is another story primarily focusing on the emergence and revelation to the fourth world too (Jackson, 2003)

Early Dawn Teaching

Nídiidááh! Our grandparent's teachings is to get up and meet the Early Dawn with white corn or pollen. In their teaching, Early Dawn children raised Changing Woman from infancy to twelve years of age, from a young lady to old age. This transformation of maturing happens in four days. There are four Early Dawn songs that celebrated her growth and development. They are all leadership songs. As she journeyed through her transformation, she has bonded with Diyin Diné'í (Holy Deities) in these songs. Today, a child's foundation of learning at child birth begins with songs. Each event of the child's journey is handled in a holy way. A child is taught to put corn pollen on the tip of his tongue to learn to communicate with the Diyin Diné'í. As the child begins to speak, their voice is what guides them in life. There are twelve words for his education. They are Earth, Sky, Mountain, Water, Darkness, Early Dawn, Haashche'éélti'í (Talking Gods), Haashch'éwaan, White Corn, Yellow Corn, Pollen, and Ripener. They set the stage for his learning and wellness. When a child's wellness is nurtured and valued, they gain strength to do well in life. Individuals can withstand hardship in life. When a child's runs in each directions, east, south, west, north, he/she builds a relationship with spiritual life. This becomes their physical being. These directions are adorned with a sacred element that were used to create Mother Earth and are also used to make us. When you run, you learn how to take care of air inside your body. You learn to breathe through your nose. In this way, your blood flows and the oxygen is rejuvenated. When you first run to the east, you are instructed to take pay attention to your thinking process. It's your livelihood. When meeting the Early Dawn, the light coming out will show you your prayers, your home. At the end, there's pollen, for your blessings throughout the day. Your mind becomes physically fit, clear and relaxed. You pray for guidance and protection. Your prayers give you a sense of power and preparedness to withstand hardships and not run from them. Our ancestors' survival depended on being skilled in making a living and the need to be strong to do work in this way (Salabye 2010).

Turkey (T'azhii) Brought Seeds to the New World

No time or warning was given to move. The water was rising quickly. The people rush to the giant reed to go up, away from the rising water. The giant reed was their only escape. They gather so quickly and as they shoved, pushed their way, they noticed the Turkey was missing. They called to him and told him to hurry or they would all perish. But Turkey was busy gathering various kinds of seeds. He was worried how the group was leaving so many plants that they would not see or eat again. Finally he hurried onto the giant reed. Only he knew that he had many seeds stored in her feathers and he was oversize. So he had to squeeze in and he was the last to enter. The creatures on the giant reed traveled many days and nights. The Turkey sat patiently while others became irritable and hungry when the giant reed stop moving. Turkey continued to sit quietly. He could only feel the wetness at his bottom. Water was not seeping up the giant reed. The Turkey was blocking the entrance with his body. After some time, giant reed began to grown again. It grew into the Fourth World.

Turkey was the last to emerge into the new land from the underworld to the Fourth World. Turkey blessed himself by cleansing in water and mud when he arrived. Other beings stood there and laughed at him pointing to his tail. The tip of his tail was not dark anymore, but had a white tip. Although, his demeanor was not a happy one, he still stood strong and proudly walked away. There was nothing growing in the new land. It was the First Man and First Woman who called a council meeting. Everyone was hungry and their stomach ache for food. They decided to stay and wait for the land to dry. Meanwhile, they return to giant reed and waited. Days went by. First Man and First Woman no longer wanted to wait, they asked for white, yellow, blue, and black bead so they could dry the land. First Woman offered the color beads in all direction and asked the Winds to help dry up the land. In four days and four nights the wind finally became quiet. First Man and First Woman checked things out. A homely pigeon was asked to fly out over the land and observe. When he returned he had a willow leaf in his beak. She reported from where they camped to the outer parts of the east, south, west, and north the land was drying up. Turkey came forward and decided it was time for him to scatter the seeds he brought with him. Everyone gave the Turkey a surprise looked how he had thought about the seeds for the new world. Then they thought about how Turkey was last to come through and how large and rounder he appeared. The group were ashamed for teasing and offered their help to plant the seeds. Turkey proudly spread his wing and gave a forceful shake. All kinds of seeds dropped to the ground. There were large, small, round, pointy, flat seeds. They were red, white, yellow, blue and green seeds. Everyone took a handful and asked where to plant the seeds (Jackson 2003).

Strategies:

Diné Story telling

The strategy will center on Diné philosophy, activities coordinated to focus on the Four Foods of Hózhó. One natural food is corn, having been in existence from the very beginning of Diné life and for some Indigenous tribes. Squash, melon, and tobacco also make up the four foods. Diné's traditional teachings of food is embedded in Navajo creation stories revolving around the perspective of Diné Culture and History.

Most students are familiar with storytelling, a teaching tool used by parents and grandparents at home and at community events. This oral technique is passed on from generation to generation.

For example, storytelling to the younger generation highly emphasizes students to live off the land and survive in the natural elements. Students will be introduced to a shorter version of the Navajo creation story, describing the prehistoric beginning of the Diné people and settling in Dinétah, the traditional homeland of the Diné. The purpose is to understand that they have an immense responsibility in this world. "Walk in Beauty" and "Hózhó," are what we use in our spiritual prayers to connect to our holistic being in the universe. In traditional teachings, the number four has a symbolic meaning tied to Navajo belief and the history, representing the cardinal directions, sacred mountains, clans, colors of natural elements, components of Navajo Philosophy and the traditional songs and prayers are chanted in a set of four.

Science Terms

Science vocabulary terms are always tough for students. One way I introduce science terms is by giving a few of words at the beginning of the lesson and giving several definitions of science term on a flash cards. Instruction in small groups is used to read a section of text with the terms again and again. A time limit of 2 to 3 minutes for the "Science Talk," students should be discussing which definition fits the term and how they know. Once they figure it out, they will sketch a picture of the term and work together to write a sentence using the word. They are taught to use various strategies such as dictionary, morphemic and contextual analysis and cognate awareness. Its purpose is to instruct specific words to enhance their comprehension. Students needs to be taught to foster words by generally playing with words and language. It is important students see the word repetitively in multiple context. In most vocabulary activity students use graphic organizer (semantic mapping) or use a traditional journal word entry. Students study the word as homework activity and at end of the lesson they are checked for understanding. Each groups sketch and post their sentences. Before new words are introduced, I do a quick informal assessment with post it notes. I ask "Do you know the word" and "Did you use the word." This will tell me if students understand the words. If not, it gives me an opportunity to give more examples and create a game out of the activity.

Structured Student Talk

Structured student talk activity is intended to stress equity of voice in class discussion. Students are presented with a question, image, diagram, they engaged by paying close attention to what information their group is sharing and usually a question that everyone can respond to. Students take turns sharing their response to the question and gives each group member an opportunity to compare their own.

Reading – Informational text

Informational text requires critical thinking and requires intense research techniques. In my class, I assign reading in pairs or in small groups for first-read. Once they finish with reading, they share and discuss what they have read. Now and then I will read a section as I monitor. Reading a small part and discussing the text is better perceived by my students. It also gives an opportunity to discuss vocabulary words that are unfamiliar with them. Students use side margin to take notes and highlight. We do this activity for comprehension. I used the Close Reading strategy to modify to my student's needs and the flexibility makes learning vocabulary learning

engaging. I will pause when I come upon an answer to the question in the reading to recognize the most important ideas in a text and how to ignore irrelevant information. They summarize in their own words what they read. Next, I provide sentence starters for tips to cite textual evidence. Students will read the section a third time independently. They'll reflect on their notes for better understanding of their work.

Research

Students spend 90 minutes a day to work on their research. Instruction on knowing the parts of the assignment is discussed. A quick review of parts of research is important. Students will explore and then select topic and begin developing questions to guide their research. Students begin gathering data. Review use of keyword search to find articles or library resource. Next, begin the writing process. Some may need assist with framework. A review of who, what, where, why, when, how of problem/issue of topic is reviewed. Once all students are at the same part of the research, writing the introduction of their research in few sentences is important. Once they have gathered all the information, organization of main ideas happens and eventually leads into an outline. Once main ideas are complete, free writing of ideas is encouraged. Students move onto middle part of the paper. Then each day they do one part of the research. The general research layout used is as follows: Introduction, Body of Paragraphs, and Conclusion. In the introduction, students write announcing topic of paper and question they are to explore. For body of paragraphs, students will write in details of the topic with 1 citing per paragraph. It is important for students have their paragraph written with citing and use of transition word before they start typing. Transition word helps guide writing into next paragraph. Last, conclusion includes a recap of the topic. It is important for students to have proper understanding of the subject, make the writing less frustrating. Instructing them to refine their notes is very important at the end of each activity. Once research is in process, monitor closely making sure students are productive. Conferencing with students more than one time each session also makes writing easier.

Opinion Writing

Opinion writing is a writing process of what students think or believe. In this unit students will help prepare food to share and taste. Students will use a writing graphic organizer and their taste testing chart to complete their writing. Their prompt will be "My Favorite Traditional Food." They will begin with a clear opinion in the introduction. It is important to use strong feeling words throughout the writing process. Next, they will support their reasons with evidence and ending with conclusion.

Gallery Walk

There are variations of gallery walks and the method I tend to use is the more traditional one. Gallery walk usually involve students being instructed to quietly circulate through exhibit to study or respond to the poster on the display. In this unit, I will divide the class into 4 groups and giving each group a display for an assignment. They will study, think about what they see and what is happening in the picture, and respond in the group. Circulating through the groups to make sure there is information being shared. If not sharing, I will coach them until engaged in

the discussion. Finally, bring the groups back together for a whole-class discussion using the questions assignment. It is important to make students think deep and come to an agreement. They will also enter notes in the Cornell Note-Taking format at the end.

Cornell Note-Taking

A note-taking method can be used after a lecture, discussion, watching a video, reading, etc. It is a Two-Column layout dividing keys or main words and notes. Organization varies when some write questions on the left side and write notes of important information on the right. The bottom portion is where students write a summary of topic. This strategy gives students a way to interact with their notes.

STEM Ready Works

A very popular science inquiry-based learning engaging students in teaching and learning what they are curious about and this gives them the ability to discover or experiment why things do what they do. It's stimulating, hands-on, and sensory rich experience integrated in academic discipline of Science, Technology, Engineering, and Mathematics. It impacts students' success to become problem solvers, assists in expanding their perspective, and experience failure and/or success through the process.

Activities

- Week one (two day lessons) – Introduction of the unit will begin with exploring Pre-History Story associated with traditional haigo hane' (Winter Stories) of the people emerging through the four worlds to Dinétah (Navajoland). The outcome is to help students refine their understanding of the oral stories (Diné Culture Curriculum Pages 388-390, 2003). The strategy is to engage students in a group conversations. Vocabulary words will be posted and reviewed daily for understanding and for writing tasks. Students will be required to take notes and sketch. Cornell Note-Taking technique's 2 column layout. Left side for key terms or heading. Right side notes and sketching. Students will begin the gallery walk. Gallery Walk is a discussion technique getting students engaged in exploring text and images placed around the classroom. It allows students to share with peers and respond to text or images. There will be one poster representing each cardinal direction of the classroom. Each poster will have two questions for students to think about as they view the exhibit. Each group will examine one poster and return to their group. They will take ten minutes to peer/share, discuss, grab new ideas, build on what one already has and reflect. A chart will be used to write their impression of what they have seen. Do they know where this story comes from? Next, students will listen to the Pre History Story. This is a winter story (haigo hane'). Teacher will briefly tell the story of The Black, Blue, Yellow, and White World to help students make connections to how *T'azhii Brought Seeds to the New World* which will be introduced later. After the gallery walk, students will identify and discuss the need for rules and laws and order in a society. Students will recognize the examples of tension between the wants and needs of the people and discuss the concept of fairness. This provides an opportunity for class discussion and record the discussion on chart paper to display the progression through

each worlds to emerge to the earth surface. Further students will discuss what living condition might have been like in the various worlds, what could have possibly been their diet? Also what activities did they do to keep busy, what created tension and why did they want certain things? Final project will be selecting one of the worlds, a PowerPoint presentation and creating their own poster/picture of the world. Display and present during Parent Conference.

- Week one (three day lesson): Students will begin with reading the *T'azhii Brought Seeds to the New World*." Vocabulary words Turkey (T'azhii), giant reed, creatures, hungry, irritable, barren, Gopher (Na'áchi'd), Na'atsóósi (Mouse), Nahat'e'ii (Rat), Gopher (Ná'azisi), underworld, new world, alternative, contribute, convoy, emergence, Locust, First Man and First Woman, pigeon (Hasbídí), teasing, vigorous.
    - Students will be introduced to the first four traditional plants - Four Foods of Hózhó - corn, squash, melon, and tobacco. Students will identify, explore, and discuss the various types of traditional foods.
    - Students will be introduced to examine the main four plant foods. Group students into four groups. Share with students they are a community of scientist discovering Plant food. Plant food will be set up on the table in the four corners, along with other traditional foods: native onions, carrots, tea, spinach, wheat and pinon nuts. Each group will examine each plant food carefully. They will observe, handle, smell and study other pictures associated with the plant. Terminology from Diné Language will be used to label plant foods. They will return to their small group and select one plant they would like to research and present. Students will begin sharing what they already know about each plant. Cornell Two-Column notes technique will be used. The discussion will focus on its cultural and historical information, nutritional value, and the preparation of foods in recipes. Teacher will check on groups to make sure they are recording notes. Next, students will use modern technology like the internet to research more information about each plant. Researching will be a daily activity. They will explore how certain foods fit into the food groups and to supplement the body with vitamins, iron, and minerals needed to stay healthy and collect recipes.
    - Day five – Students will meet with two elderly consultants. Consultants will be used to provide experience and clarify working with native plants and explain in detail the information. They will talk about tobacco plant and it's beneficial to our people. Students will continue with documentation of notes. Next, they will prepare some recipes with students using native plant foods. Consultants will provide an opportunity for authentic measuring tips like using "hand-full and good pinch," or gourd full of liquids methods. Teaching them to estimate measurements comes from years of practicing. They will also learn about "Juniper Ash" that's added to blue corn mush. An open class discussion as to why we add juniper ash to blue corn meal. Here they will have an opportunity to write their recipes.
- Week Two – (day one and two): Students will experiment with planting seeds from the Four Plant Food, except Tobacco. They will plant the seeds in a plastic bag and observe the seed germinate. This will be an on-going experiment. Students are using scientific skills (observation, question, hypothesis, conduct experiment, analyzing data) and taking pictures for record keeping. Students will watch "Dry Land Hopi Corn Farming with

Ahkim" on YouTube to learn about dry land farming. They will be introduced to gardening. What is a garden or field (cornfield – d'ak'e)? They will make a list of things required for farming a garden or field. A brief introduction of the types of soil, air, water and proper care of the seeds. Students should be familiar with land, air and water from "Carbon Dioxide Unit).

- Day three and four – Students will be introduced to diabetes. They will watch a video on *The Role and Anatomy of the Pancreas* – YouTube>watch. Introduction of key vocabulary words (Duct, enzymes, pancreas, endocrine, Exocrine, insulin, bile, Lipase, digesting, hormones, blood, nerves, cholesterol, glyceride, and gastrointestinal tract). Vocabulary will be studied using a semantic map, an anchor poster will be referred to daily. Students will also keep a journal of the words' definition, synonym and parts of speech, Diné Language will also be noted. Students in pair or triad, will develop a model of the human body's abdomen to demonstrate movement of matter through the digestive system. Students will use model later for their presentation. Next students will read about eating with high levels of salt and sugar, high trans-fat and carbs from processed foods. Why eating too much fast foods and junk foods are bad for your health?
- Day five – Students will learn and share the traditional foods. Here the teacher will pick and choose two students from each group to bring in their parents to help demonstrate the recipe and share with the class. They will be in small groups. Pictures of 5 traditional foods will be distributed. Students will study the food and discuss what they know about the food. List their ingredients and content (if any) or where the food comes from and how it is made? Diné Language will also be noted. Students will work with an elder presenting the food to the class. They will demonstrate how the food is prepared and story behind the food. Students will take notes, taste the item and discuss any new information. Lastly, they will select a favorite snack and compare and contrast the food ingredients to the traditional food. The will be asked to write about why they prefer the selected food choice – an opinion writing will entail the activity. For home connection, they will work with a relative at home to write a recipe of their food choice and share with the class for group sharing. From sharing they can add to their recipe book.
- Week Three (day one) – Introduction to Early Dawn teaching. Invite an elder consultant will tell the story about early dawn teaching. Students will continue to take notes and ask questions. Questions will be brainstorm ahead of time. As a whole class, students will generate a list of some of the physical activities they can do without time limit.
- Day two and three - A student-athlete will be invited to share their passion for sports. Students will research a sport and focus on the characteristic of fitness, leadership, positive thinking, nutrition and lifestyles. They will share their research through class presentations, create and display an exercise chart, along with noting in the comment section what they had for dinner/snacks. They will practice this activity throughout the school year. Students will sketch how they feel about what physical activity they are doing daily and share in small groups. Students will also learn about being hydrated, each will be presented with a water bottle and be asked to fill it up in the morning and after lunch to practice good health.
- Day five - Students will prepare for their garden in late winter or early spring. STEM Ready Works technique will be utilized.
    - **S**cience: They will transplant their germinated seed. Find good source of light.

- **T**echnology: research best way to transplant, Use technology for record keeping and observation notes during the phase of growth, take picture and download growing process. Research similar plants to compare and contrast.
- **E**ngineering – design planting area (garden box), find best angle of sun,
- **M**easurement: measuring out the plot and spot to plant. Measure germinating seed. How much water and when to water? Does temperature changes make a difference? Final process is to keep record and report on findings.
- This day students will prepare a traditional food dish of their choice and share and celebrate traditional foods day. They will also present their power point presentation.

- Various articles will be assigned in the classroom and discussed such as The Long Walk Period, Junk Food Tax article, Miss Navajo Fry bread Contest, Oral narrative of Defeating Hunger and Commodity Food articles. These articles expose enthusiasm for informational text environment at the instructional level. It is also an opportunity to build background knowledge. In this activity, students will share main idea and supporting details. Teacher will record information from the chart and post it so kids can reflect.

Appendix

Inquiry Process

Inquiry Process establishes the basis for students' learning in science. Students use scientific processes: questioning, planning and conducting investigations, using appropriate tools and techniques to gather data, thinking critically and logically about relationships between evidence and explanations, and communicating results.

Observations, Questions, and Hypotheses

Formulate a relevant question through observations that can be tested by an investigation.

A. Formulate a relevant question through observations that can be tested by an investigation.
B. Formulate predictions in the realm of science based on observed cause and effect relationships.
C. Locate information related to an investigation.

Scientific Testing (Investigating and Modeling)

Design and conduct controlled investigations

A. Demonstrate safe behavior and appropriate procedures in all science inquiry.
B. Conduct simple investigations based on student-developed questions in life, physical, and Earth and space science.
C. Measure using appropriate tool and units of measure.
D. Record data in an organized and appropriate format.

Analysis and Conclusions

Analyze and interpret data to explain correlations and results; formulate new questions.

A. Analyze data obtained in a scientific investigation to identify trends and form conclusions.

Communication

Communicate results of investigations.

A. Communicate verbally or in writing the results of an inquiry.
B. Choose an appropriate graphic representation for collected data.

C. Communicate with other groups or individuals to compare the results of a common investigation.

History and Nature of Science

Scientific investigation grows from the contributions of many people. History and Nature of Science emphasizes the importance of the inclusion of historical perspectives and the advances that each new development brings to technology and human knowledge. This strand focuses on the human aspects of science and the role that scientists play in the development of various cultures.

History of Science as Human Endeavor

Identify individual, cultural, and technological contributions to scientific knowledge.

A. Identify how diverse people and/or cultures, past and present, have made important contributions to scientific innovations.

Science in Personal and Social Perspectives

Science in Personal and Social Perspectives emphasizes developing the ability to design a solution to a problem, to understand the relationship between science and technology, and the ways people are involved in both. Students understand the impact of science and technology on human activity and the environment. This strand affords students the opportunity to understand their place in the

Changes in Environments

A. Explain the impacts of natural hazards on habitats.
B. Propose a solution, resource, or product that addresses a specific human, animal, habitat need.

Science and Technology in Society

Develop viable solutions to a need or problem.

A. Describe the relationship between science and technology.

Teachers Resources

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The Role and anatomy of the Pancreas
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How did Hopi Grew Corn on Harsh dry lands.YouTube.12/7/2016. By Frmn95.

Other Student Readings

Navajo Nation Imposes 2% Sin Tax on Junk Food to …
time.com/3762922/junk-food-tax-obesity-navajo-nation

Miss Navajo Nation contest in Window Rock cancels fry ...
https://www.azcentral.com/story/news/local/arizona/2017/09/05/miss...

Long Walk of the Navajo - Wikipedia
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