

Composting For a Better Earth

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Author Note:

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Composting for a Better Earth

The curriculum unit that I would like to develop during this seminar is called Composting for a Better Earth. I want to create an outdoor learning environment at my school that will allow students to compost and use their product to grow their own food. The students will learn that composting is a natural way to recycle and teaches them to be good stewards of the Earth. Children will begin to understand nature as a transformation process and how composting benefits us all because it cleans up the earth's 'trash' by recycling organic material and turning it back into rich soil so that new living things can grow. I want to include cooperating with the Navajo language, culture, family, and community members in this curriculum unit, observing, describing, using a microscope, documenting, graphing, thinking critically, discovering, creating a plan, and applying. We will use a hands-on approach to understand how composting benefits our community.

Context

My name is Judith Cizek, and I am a FACE preschool teacher at Tohajiilee Community School located in Tohajiilee, NM. I teach three and four-year-old Native American children. The school is located on the Cañoncito Band of Navajos reservation, a non-contiguous section of the Navajo Nation, 30 miles west of the city of Albuquerque. 'Tohajiilee' is a Navajo phrase meaning "where people draw up water using a cord or rope one quantity after another." Tohajiilee was formed on the "Long Walk" during the forced relocation of Navajo people in 1864. It is believed that people who settled there refused to go further and settled in the canyon. The village used to be called Canoncito, but after local high school students created a petition, it was renamed Tohajiilee in the mid-2000s. The village has a population of approximately 1650 people. Tohajiilee has no store, library, or gas station, and the unemployment rate is above 50%.

Our school serves students who are in PreK to 12th grade and has an enrollment of approximately 325 students. All students receive free breakfast and lunch. The student population is 100% Native American. Our Mission Statement is to integrate the Navajo Language and Culture for quality academic achievement resulting in success. Tohajiilee Community School participates in a Navajo language immersion program from K – 4th grade. The school collaborates with community programs, including the Tohajiilee Outreach Program, which offers high school students' dual enrollment at UNM, and The Nurtured Heart Approach, which provides training for families in child discipline. Young Musicians Initiative, offering music education and performance opportunities; EMS Recreational Bicycle Program, which teaches students how to fix bikes; and The Family Engagement Center, helping to nurture the relationship between home and school. Two preschool classes are offered, one funded by the Family and Child Education (FACE) program and the other funded by Albuquerque Public Schools. Combined, we are serving 19 students. Some continue to be virtual learners, and a small group comes to school for in-person learning.

I have worked for the Tohajiilee FACE program for five years. Before coming to Tohajiilee, I worked for Baca Dloo'yazhi FACE program in Prewitt, NM, for five years, and I taught 3rd and 2nd grades at Tobe Turpin Elementary for eight years School in Gallup, NM. I am originally from Wisconsin and moved to New Mexico in 2004. I currently live in Albuquerque, NM, and I

have lived here for six years. In the time I have worked at Tohajiilee I have become a part of the educational community. I know many students of all ages and the families I have served, wonderful staff members, and a few community leaders such as the Chapter President and school board members. I have attended community events, including group walks, fall dances, a Kin al dah, community Trick or Treating, and events that combined preschool students with seniors. It has been a privilege to have been able to learn Navajo words and participate in cultural activities with many community members. They have made me feel welcome.

Rationale

My curriculum unit will focus on The Three Sisters: Corn, beans, and squash, a Native American agricultural tradition. This unit is essential for our community because it focuses on food, a need for everyone. Learning how to grow food is a sustainable practice that has carried on through the centuries. Through teaching about the Three Sisters, students will become empowered with the knowledge of their heritage and the ability to use ancient methods to grow these traditional staple foods. This practice can make a difference in the community because by practicing their traditions, students will feel connected to the place where they live as they become producers and contributors to the community's betterment.

The unit is essential to young children because it is centered on familiar foods that are a part of their culture and tradition. There are many opportunities for hands-on participation, including creating rich soil, planting seeds, and caring for plants. Students will spend time outdoors, observing the characteristics of the environment in which they live and giving them a sense of belonging to a place. This learning will provide Native language, literature, art, music, and dance as they explore these three vegetables' connection to their culture.

The Three Sisters Garden: Native American Stories and seasonal activities for the curious child support learning about The Three Sisters to teach young gardeners to be "caretakers of the Earth." The video "Pueblo Farming Methods for Your Resilient Garden" explains that Native people have been growing Corn for thousands of years and that the growing methods have been perfected over time to be suitable for our environment. Teaching young children to grow sustainable foods in the ways of their ancestors is still relevant to the health and well-being of people.

As a young girl, I enjoyed helping in the garden as my parents taught me how. I loved when my dad would turn the soil over because I waited with my bucket ready to pick out the worms to use for fishing. We saw all kinds of strange creatures in the dirt, and once I saw a worm with a mass of tiny baby worms. We would pack up the big garbage cans in the back of the station wagon and go to a farm to get horse manure. It smelled all the way home but made the soil fertile. I helped my mom to pick the beans and asparagus correctly so I wouldn't damage the plant. I especially loved eating the fresh vegetables! I gained so much pleasure and knowledge from gardening and made many pleasant memories of my parents and me working together to put food on our table. It was satisfying to feel like I was contributing to a task that helped to support our family. I still love to grow plants and always think about my mom and dad's garden. When I retire, I want to have a beautiful garden like theirs and perhaps pass on the knowledge to a grandchild so they, too, can pass it on someday.

The Three Sisters unit will enrich the general curriculum unit on farming. It will include preparing for gardening, such as composting to enrich the soil and creating a bed, planting and growing, and then harvesting and using. The unit is best suited to use for most of the year. It would begin in the fall with composting and creating a garden bed, planting seeds in the late winter, and planting the seedlings in the garden bed in the spring. Harvesting would take place in the fall after the students return to school.

Topic Summary

The Three Sisters: A Native American Agricultural Tradition

A Brief History of the Introduction of The Three Sisters: Corn, Beans, and Squash

Over 60% of the food the entire world eats today originated and was developed by the American Indian people (Rogers, 2022). Corn, beans, and squash are the most prominent of these foods, called The Three Sisters by the Iroquois. The process of growing the three plants together is an ancient and contemporary Native American agricultural tradition. (Dennee, et al., 2001). When the Spaniards came to southwestern America, indigenous peoples were already growing Corn. The seeds of these vegetables were initially cultivated by the indigenous peoples from Central and South America thousands of years ago and were brought to North America through trade. Sometimes referred to as "Indian corn," the colored Corn that Native Americans grew is the origin of all other varieties of Corn. Beans were all climbing types and arrived more than 2000 years ago. Squash also originated in Central America and has been used by indigenous peoples for thousands of years. (Rogers, 2022).

Since emerging into this world, the Navajo people have been saving seeds of these crops, The Three Sisters, to pass down through the generations. (Davenport, 2016). Through thousands of growing seasons, the practices of producing these three staple foods have been perfected, and the seeds have become progressively hardy so that Native Americans can ensure an ample food supply even when grown in poor soil and without certainty of available water.

A Brief History and Agricultural Practices of The Three Sisters

The Three Sisters (Corn, called maize, beans, and squash) is what indigenous farmers in North America called an ingenious practice of mixed cropping as the result of experimentation and learning, and archaeological evidence has shown that the three domestic produce have been grown together for perhaps 5,000 years. (Hirst, 2020). These three staple foods were often grown together because they supported each other during the growing process. Maize grows straight and tall, enabling the beans to use the stalks to climb upon so they may reach for the sun, and squash uses the shade and humidity provided by the Corn and beans together. (Hurst, 2020). This practice ensured that Native American farmers would have successful plantings and food could be produced even during harsh weather conditions. On the Navajo reservation, farmers have been relying on nearby hills to irrigate their crops for centuries. The rainwater that falls on nearby mesas rushes into hand-dug rocky arroyos and then spreads out into intentionally placed Corn, bean, and squash plots to water the plants. (Davenport, 2016).

Beans naturally absorb nitrogen from the air and convert it to nitrates, fertilizing the soil for Corn and squash. In return, they are supported by growing around the corn stalks. The squash leaves provide ground cover between the Corn and beans, preventing weeds from taking over the plots and competing for moisture. These three plants thrive together better than when they are planted separately. Thus, The Three Sisters are members of a family that support each other. (Hill, 2021). Indigenous farming was organized by gender, with men creating new fields, burning grass and weeds, and digging trenches between the plots for planting. Women prepared fields, planted crops, tended to the weeds, and harvested the crop. (Hirst, 2020). The Three Sisters are females who respect the women's work and care for the well-being of the plants.

A Brief History of the Ancient Uses of The Three Sisters

The Three Sisters have been a prominent feature of the diet of Native peoples for many centuries. When Corn was harvested, it was braided together by its husks and hung to dry. After it dried, it was shucked and stored in containers for later use. Some corn was kept for roasting and eaten on the cob, some varieties were popped and eaten as is or used in dishes, and some dried corn kernels were crushed into fine flour and eaten with dried fruit or meat as a mush by adding water. Later, the corn flour was made into bread or masa wrapped in leaves and cooked. The cornstalks were also boiled to make syrup. Every part of the ear of Corn was used. Women braided the husks for rope and twine and coiled them into containers and mats. The shredded husks made good kindling and filling for pillows and mattresses. The corncobs served as bottle stoppers, scrubbing brushes, and fuel for smoking meat. Corn silk made hair for cornhusk dolls. (Carnegie Institute, 2018).

Beans were picked, dried, stored, and then boiled and used in soups with added Corn or meat. Beans were also often added to cornbread.

Squash was eaten fresh by boiling or baking it, and it was also dried, then boiled, and added to cornbread or soups or mush. Squash blossoms can also be eaten, although not usually—these original methods of using The Three Sisters in cooking resulted in nutritious, sustaining meals.

A Brief History of the Culture and Traditions Associated with The Three Sisters

Culturally Corn played an important spiritual role in many tribes - in some cultures, Corn was a respected deity, while in others, Corn was a special gift to the people from the Creator or cultural hero. In the Navajo creation myth, the turkey brought seeds into this world, known to the Navajo as the fourth world. All the creatures of the third world were climbing up into this world through a ponderosa pine to escape a flood, and the turkey was the last to emerge through into the fourth world because the gobbler was busy picking up seeds so the Diné could bring their traditional plants into this world. (Davenport, 2016).

In addition to its importance as a food source, Corn also plays a ceremonial role in many tribes. Sacred corn pollen or cornmeal is used as a decoration in its honor and for spiritual offerings. Corn is a common clan symbol in many Native American cultures, including the Navajo. Many tribes also have a Corn Dance among their tribal dance traditions. (Native Languages of the Americas, 2020). Corn is additionally a vital element of Navajo prayer. The Corn pollen is

dusted off the tassels. And used in ceremonies as a blessing and is offered in prayer. Maize is also used during a ceremony when a Navajo girl comes of age — a large corn cake is cooked underground in a circular pit lined with corn husks (Explore Navajo, 2022).

Beans are also used as a clan symbol in some Native American cultures. Many indigenous groups also have a Bean Dance among their tribal dance traditions. Some tribes have legends about the relationship that exists between Corn and beans.

In addition to squash's vital role as a food crop, the dried gourds were also used as dance rattles in some Native American tribes. Squash blossoms were an important cultural symbol and were represented in the art, used in dance costumes, jewelry designs, and even the traditional squash-blossom hairstyles, proving the significance of the fruit in the survival of the people. Squash is also a clan symbol in Native American cultures, such as the Squash Clans of the Navajo (whose Squash Clan is named Naayízi Diné). (Native Languages of the Americas, 2020).

A Brief Summary of Modern Farming of The Three Sisters

European immigrants eventually arrived and settled permanently on the most fertile and desirable North American lands and acquired the seeds that Native growers had carefully bred for centuries. The Indian Removal Act in 1830 forced the Native people from their homes, pushing them onto lands they did not know agriculturally, making their traditional farming practices almost lost to the next generation. On the reservations, families were assigned to small areas not sizable to plant community gardens, preventing them from growing enough food to support themselves. When Native children were forcibly taken away from their homes to attend boarding schools, they lost the opportunity to learn ancient agriculture techniques or how to preserve and prepare the foods they were accustomed to. Instead, they were given Western foods, while their traditional foods were forgotten. Together, these conditions and The Indian Removal Act caused the ancient three sisters' farming technique that had been used and passed on for generations to almost disappear from these newly located Native communities.

Today many Native people in the United States are working to find ways to reclaim indigenously cultivated varieties of Corn, beans, squash, and other crops as well. This effort is essential for many reasons, including gaining access to healthy, culturally appropriate foods to help lower rates of diabetes and obesity, affecting Native Americans at much higher rates than other groups. Sharing traditional knowledge about agriculture is a way for elders to pass cultural information to younger generations. Indigenous growing techniques also protect the lands that Native nations now inhabit by enriching the soil and controlling erosion, providing many benefits to the surrounding environment. (Hill, 2021).

Today, many Native Americans have been influenced by unhealthy choices brought to them by the media, convenience stores that offer junk foods, and fast-food restaurants that incorporate too much fat, salt, and carbohydrates into their menus. This choice has caused more negligible home cooking of foods that used to be made with unprocessed, healthy ingredients. Diabetes has become an epidemic in many Native American communities as a result of the convenient access to unhealthy foods. One way to reverse this anomaly is to bring back traditional agricultural practices to the communities. There is a distinct lack of gardening on the reservation as people have less time for caring for the plots and less interest in the types of foods grown in them.

(Davenport, 2016). The much-loved Navajo taco, which has a fry bread shell, was originally created using ingredients supplied by the United States government, which were not traditionally used in Native cooking. Wheat flour, lard, and processed cheese that has been repeatedly given to families on the reservations are used in the Navajo taco but proved to be laden with fat, excess calories, and cholesterol. This combination of poor nutrition eventually causes health issues and obesity. The use of modern media has replaced regular participation in outdoor activities, further causing children to exercise less than in the past.

Fortunately, there has been interest in Native chefs in creating meals made with traditional ingredients so that people may choose to follow the ways of their ancestors who were not inundated with the health problems of the current generations. (Hill, 2021). Recently, a national effort has been made to create awareness of the Traditional Food Principles researched by The Northwest Indian College and endorsed by the United States Department of Agriculture. These values include food as the center of culture, and traditional foods are whole foods eaten with the seasons. Eat a variety of foods, eat local foods; wild and organic foods are better for health, honor the food web, cook and eat with good intentions, promote generosity, and cultivate food sovereignty. (Krohn, et al., 2017).

The Use of The Three Sisters Farming Practices and How They Can Affect Native Communities

Due to the vast consumption of junk and fast foods, there is a real need to promote Native gardens in indigenous communities. Through obtaining and spreading the knowledge of elderly gardeners, community members will see that ancient gardening practices can heal their bodies, minds, and spirits. (Hill, 2021). The Three Sisters support community health and quality of life by thoroughly meeting dietary and nutritional needs. Each is high in fiber and together provides a variety of minerals and vitamins necessary for good health. (Webb, 2021). By teaching Native youth the farming practices of their elders, they will become aware of their roots and place as community members. Children who understand and respect their own roots ensure their community's survival and will learn to live in harmony with the Earth. (Dennee, 2001).

Alignment with Standards

New Mexico Early Learning Guidelines

- 1.1 Demonstrates body coordination and strength in activities such as climbing stairs with alternating feet, marching, running, jumping, hopping, dancing, and riding tricycles and scooters.
- 6.1 Demonstrates the ability to effectively engage in conversational skills in their home language (including ASL) for various purposes relating to real experiences and different audiences.
- 7.2 Demonstrates comprehension of a story "read aloud" by asking relevant questions or providing key details in literacy texts.
- 9.1 Uses numbers and counting as means for solving problems and determining quantity.
- 11.3 Demonstrates emerging knowledge of measurement.
- 13.1 Communicate ideas and/or feelings through creative activities (for example, making a song, acting out a story, creating a piece of artwork, or a set of movements).
- 14.1 Uses senses to investigate characteristics and behaviors in the physical and natural worlds and begins to form explanations of observations and explorations.

- 20.1 Plays and interacts with various children sharing experiences and ideas with others.
- 21.2 Accepts guidance from various appropriate adults and seeks their support when needed.
- 27.1 Focuses and completes various tasks, activities, projects, and experiences.

Student Learning Objectives

The child will be able to use gross motor control independently, including balance, spatial awareness, and stability.

The child will be able to communicate experiences, ideas, and feelings through speaking or American Sign Language.

The child will be able to engage in activities that promote the acquisition of foundational reading skills.

The child will be able to understand numbers, ways of representing numbers, and relationships between quantities and numerals.

The child will be able to demonstrate an understanding of nonstandard units to measure and make comparisons.

The child will be able to demonstrate appreciation for the arts (movement, music, visual, and dramatic).

The child will be able to use the scientific method to investigate the physical and natural worlds and to hypothesize and make predictions.

The child will be able to work cooperatively with other children and adults.

The child will be able to develop relationships of mutual trust and respect with others.

The child will be able to display persistence and pursues challenges.

Teaching Strategies

The teaching strategies I intend to use as a teacher of Native American children are carefully chosen to reflect Native epistemologies and values. They will focus on the whole development of the person, they will be situated within place-based learning, there will be an emphasis on oral history and story-telling, children will have a choice in their own education, including other adults that are considered as teachers, children will have experiences that teach them to listen carefully and respect elders while observing what they do and say, there will be modeling and demonstrations, oral language skills will be emphasized, value is placed on persistence, and children will share new skills when they can reach mastery.

Native Stories

Corn, beans, and squash will be introduced through authentic Native stories using the teaching strategy of oral-story telling done by an informed elder of our community and teacher read-aloud books about these topics.

Other Adults Considered as Teachers

Children will be shown examples of Corn in different colors and learn the representation of each color in the tradition of their original regions. Students will create a story of their own about the different colored Corn told through their artwork. This can be accomplished in small groups

where children share their ideas. Social studies will be incorporated by tracing on a globe the route corn traveled from Mexico to North America. Adult teachers from our community will talk to the children about the use of Corn in Tohajiilee where they live.

Place-Based Learning

The students will be shown examples of beans in different colors and learn their names. Bean soup will be made following a picture recipe and will be shared with our families. Students can explore the surrounding area of our school and look for plants that grow on vines as beans do.

Demonstrations

Squash also has wide varieties and colors, and the children will learn their different names. Families will be involved as cooks and will be asked to make their favorite squash dish and share it at a feast. Students will design their own squash lantern, carve it with a family member, and then tell about it to the others. The seeds will be weighed and counted in English and Navajo to see who has the most, least, or the same.

Listening and Showing Respect to Elders

Students will learn how the three sisters grow together and benefit each other by acting out the plants' position and stature with their bodies. The children will visit a community member's garden and think of questions to ask the gardener about it. After looking at examples, the students will design a garden plot as they decide what shape to make it, how big it will be, and where to locate it. Composting will be introduced to create healthy soil for the plants. Then students will work with the seasons to prepare for, grow, and harvest their crops.

Cooperative Games

A cooperative game will be played with a corn cob being passed around a circle that teaches the skill of following directions. Students will be taught about corn weaving through demonstration by a knowledgeable community or family member and learn in their Native language the words for over and under. They will also create a harvest necklace using Corn, bean, and squash seeds in the student's choice pattern. Children will also play a game using a corn cob dart and a hoop which are made with hands. Family members will make a cornhusk doll with their little ones as a project. Students will learn to sing a song called "Now I Walk in Beauty" and walk in a circle while singing it. We will learn and use the Navajo language in the song after learning it in English. The children will perform this song for others in our school.

Oral Language Skills

Above all, the Navajo language will be incorporated into this unit, including the words for Corn, beans, and squash, as well as other relative words through Native speakers and the strategy of Total Physical Response.

Throughout this unit, learning is achieved through lived experiences, including story-telling, cooperative learning, demonstrations, role modeling, personal reflections, talking circles, and hands-on experiences.

Student Assessment Plan

I will assess the student's learning of the curriculum unit's content using developmentally appropriate methods so that I will know when students meet my learning objectives as they are taught.

As students learn to listen to specific stories through story-telling and the teacher read-a-loud, I will assess the students' listening and comprehension skills by asking questions about the story, such as "What is the story about?", "Who are the characters in the story?" and "What happens in the beginning, middle, and end of the story?"

As students learn about the different traditional meanings of the colors of the Corn and what they represent in nature, students will make a book with a page about each color of Corn. I will assess the drawings that they create, showing the knowledge they have gained for accuracy and understanding.

After learning together about the use of Corn in Tohajiilee, New Mexico, the students will be able to participate in a discussion in a talking circle about the use of Corn in their community using two or three open-ended questions asked by the teacher.

The students will make bean soup from a picture recipe. They will be able to use the recipe to tell some or all of the ingredients. And describe the actions of making the soup as shown in the recipe. I will assess their knowledge of how to make the soup and use complete sentences as they speak.

Students will be shown different examples of plants that grow on vines. We will explore the school campus to look for plants that grow on vines, and I will observe the children for understanding. The students will be able to identify plants that grow on vines among plants that do not grow on vines when shown pictures of both kinds of plants.

The children will create a design on squash and then participate with their families in carving it to make a lantern. They will be able to describe the carving to the group, and I will listen to assess their ability to use complete sentences and descriptive words. After completing the carving of the squash, the seeds will be saved and then used to be organized into groups of ten. I will observe the method of counting used, such as touching or moving each one as they count, and whether the counting is accurate through observation. The students will count in both English and Navajo, and I will also assess the order of the numbers in both languages through listening and observation. I will ask the students to identify which squash had the most, least and, if any, had the same number of seeds, and I will assess their knowledge of comparing at that time.

Children will use their bodies to demonstrate the position of each of the three sisters in a garden plot. I will assess understanding by calling out the name of one of the three vegetables and watching for the correct body position that matches the called vegetable.

Students will design a garden plot in cooperative groups and will be assessed on the ability to explain to the whole group their reasoning for why they chose the shape, the size, and the location.

As students are introduced to composting, they will be able to decide which items are compostable and which are not when shown pictures of both by understanding that compostable items are derived from living things and non-compostable items are not.

A cooperative game will be played using a corn cob that teaches children how to follow directions. The students will be assessed by their ability to move the corn cob according to the directions given.

Students will participate in corn weaving and learn the Navajo words 'over' and 'under.' I will assess the students' understanding by calling out one of the words and observing for the correct action.

The students will create a harvest necklace using the seeds of Corn, beans, and squash. They will be asked to assemble them by creating their own pattern. I will assess by observation the ability to create and continue a simple pattern using all three kinds of seeds.

Children will learn and participate in a game that uses a corn cob dart and is thrown through a hoop. I will assess students on their ability to take turns through observation.

Students and their families will create a corn husk doll together as a project. The students will share how they made their doll and describe it with the group. I will assess students' ability to use complete sentences and descriptive words as they speak.

The Navajo language will be incorporated into each lesson as we learn about the three sisters and the different activities that accompany them. The understanding of the Navajo words will be assessed using the strategy of Total Physical Response. I will observe as students are able to show the appropriate actions for the words given and say the word for the action given.

Classroom Activities

The Three Sisters Lesson Plan Day 1

Objective: Students will be able to communicate experiences, ideas, and feelings through speaking or American Sign Language.

Standard: 7.2 Demonstrates comprehension of a story "read aloud" by asking relevant questions or providing key details in literacy texts.

Materials: Indian Corn in different colors as available, such as blue, red, white, purple, yellow, and rainbow; copy of the Zuni story, "The Rainbow Corn Maidens," or invite a guest elder of the community to tell a story about the first Corn, a flute or recorder, construction paper, crayons, glue.

Steps: Have students sit in a circle. Introduce the Indian Corn by showing each colored cob and allowing students to use their five senses to explore them. Tell them the word for Corn in Navajo, 'naadaa', and demonstrate the sign for Corn in American Sign Language (put an extended index finger near the mouth and twist it forward twice). Students can practice saying the word and using the sign. Use the word and gesture together as you use the word throughout the lesson. Talk about the colors and tell students the origins of the different corns. Ask, "Why are there so many different colors of corn?" Allow each student to answer with their ideas. Introduce the guest speaker and ask each student to introduce themselves by saying their name using a complete sentence. Listen to the speaker's story about the first Corn or read aloud the story, "The Rainbow Corn Maidens" ask the students questions to check for understanding, such as "what happened to the first corn?" and "how did the people get the corn to grow again?" If using the story "The Rainbow Corn Maidens," introduce a flute or recorder and allow each student to blow into it. Supply students with a piece of construction paper and ask them to draw a picture relating to the story told. Have students glue their choice of corn kernels on the paper.

Assessment: Students will share with the group what part of the story their drawing shows and what kind of Corn they chose to include. The teacher will write what the students say about their pictures on paper. Display in the classroom as a book about the first Corn. Use the teaching strategy of Total Physical Response to assess understanding of the Navajo word for Corn.

The Three Sisters Lesson Plan Day 2

Objective: Students will be able to use the scientific method to investigate the physical and natural worlds and to hypothesize and make predictions.

Standard: 14.1 Uses senses to investigate characteristics and behaviors in the physical and natural worlds and begins to form explanations of observations and explorations.

Materials: Pictures of the lifecycle of a bean, construction paper, crayons, and glue.

Steps: Introduce a bean plant using pictures of a bean's lifecycle. Talk about how beans grow on a vine. Take a walk around the school, point out plants growing on vines and other plants that are not, and explain the difference between them.

Ask students to collect various parts of the plants that grow on a vine, including the stem, leaves, and flowers. Students will use the parts of the vined plants they gathered and glue them onto construction paper as a bean plant utilizing a picture as a model. Students will glue on a bean where the seed is located and where the fruit is located.

Assessment: The teacher will observe the student's work to understand a bean plant's parts.

The Three Sisters Lesson Plan Day 3

Objective: The child will be able to understand numbers, ways of representing numbers, and relationships between quantities and numerals.

Standard: 9.1 Uses numbers and counting to solve problems and determine the quantity.

Materials: Assortment of dry beans.

Steps: Place assorted dry beans on a table. Name the kinds of beans you have. Allow students to explore them using the five senses. Introduce the name for bean in Navajo (naa'oli) and demonstrate the sign for bean in American Sign Language (left hand made into a fist with the index finger extended, right-hand pinches the tip of the extended index finger and twists twice). Students can practice saying the word and using the sign. Use the word and gesture together as you use the word throughout the lesson. Ask each student to count out three groups of ten beans with the help given as needed. Ask students to work cooperatively to assemble their three groups of beans into groups according to the attribute of their choice (color, size, shape). When students are finished, ask questions about how they are grouped, such as "which beans are the smallest?", "largest?", "which kind did you have the most of?", "the least?"

Assessment: The teacher will observe each student's counting to ten and sorting ability. Use the teaching strategy of Total Physical Response to assess understanding of the Navajo word for the bean.

The Three Sisters Lesson Plan Day 4

Objective: The child will be able to engage in activities that promote the acquisition of foundational reading skills.

Standard: 7.2 Demonstrates comprehension of a story "read aloud" by asking relevant questions or providing key details in literacy texts.

Materials: Beans that have been soaked overnight and cooked until soft beforehand, assorted herbs such as parsley, thyme, basil, onion, garlic, salt, pepper, bouillon cubes, canned carrots, picture recipe for bean soup, measuring cups, measuring spoons, soup pot, bowls, spoons, stove, or microwave.

Steps: Remind students of the Navajo name for bean and show the sign for it. Students can practice saying the word and using the gesture. Ask students if they have ever eaten beans before. Ask where they have eaten them and who made them. Ask if anyone knows how they were cooked. Show students the picture recipe for bean soup. Have students 'read' the recipe aloud with help as needed. Show students the cooked beans and explain how you prepared them to make them soft. Have students take turns measuring and adding ingredients to the beans per the recipe. Heat the soup on a stove or in a microwave until heated. Allow students to ladle as much soup as they like into a bowl. Eat the soup together while discussing the students' likes and dislikes and why beans are essential food for our bodies.

Assessment: The teacher will ask questions to check for understanding, such as, "what are the ingredients we used in the bean soup?" and "how much of a certain ingredient did we use?" The students will use the picture recipe to help with their answers. Use the teaching strategy of Total Physical Response to assess understanding of the Navajo word for the bean.

The Three Sisters Lesson Plan Day 5

Objective: The students will be able to use the scientific method to investigate the physical and natural worlds and to hypothesize and make predictions.

Standard: 14.1 Uses senses to investigate characteristics and behaviors in the physical and natural worlds and begins to form explanations of observations and explorations.

Materials: Assorted squash, carving tools, parents/caregivers, a scale, sticky notes in two colors, markers, and LED candles.

Steps: Place assorted squash on a table. Name the kinds of squash you have. Allow students to explore them using their five senses. Introduce the name of squash in Navajo (nah-ghizi) and demonstrate the sign for squash in American Sign Language (make a fist with the thumb over the first two fingers, then lift the thumb and index finger to point down, then up). Students can practice saying the word and using the sign. Use the word and gesture together as you use the word throughout the lesson. Invite parents/caregivers to join their children in making a lantern from a squash. Allow students to choose a squash.

Ask students to make a prediction about which squash is heaviest and which is the lightest. Let each student lift each squash and then place a yellow sticky note on the squash they think is the heaviest and a different colored sticky note on the squash they believe is the lightest. Before weighing the squash, ask students why they made their prediction. Weigh the squash and find out the answers. Students will work with their parents/caregivers to use a marker to draw a design on the squash where they want to carve it. Then parents will use the carving tools to cut the squash. Before students take out the seeds, each one will predict how many seeds are inside. Then students will count the seeds, making groups of ten with help as needed. Discuss the results and ask, "who had the most seeds?" and "who had the least?" Place a LED candle inside each squash.

Assessment: The teacher will assess counting skills by listening and observing. Use the teaching strategy of Total Physical Response to evaluate the understanding of the Navajo word for squash.

Resources

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