

Patterns, Relations, and Functions...Oh My!

Patterns of the Four Sacred Mountains for the Kindergarten Classroom

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Introduction

Yá'át'ééh, my name is Tiffany Tracy and I am a Diné woman. Tł'izíłání nishłj, Kinyaa'áanii báshishchíín. Nát'oh Diné Táchii'nii dashicheii, Tábaqahá dashinalí. I was born and raised in Tséhootsooí (Fort Defiance), Arizona and attended Window Rock Unified School District from Kindergarten to my Senior year of high school. My mother is Grace Tracy from Bee ak'id Baa'oogeedí (Whitecone), Arizona. My maternal grandparents were Gladys and Hosteen Ginnie. My father is Thomas Tracy from Tó Hahadleeh (Indian Wells), Arizona. My paternal grandparents are Lena Wilson and Louis Tracy. I attended and received my Bachelor's degree in Elementary Education at Diné College in Tséhilj (Tsaile), Arizona and received my Master's degree in Elementary Education from the University of New Mexico in Albuquerque. I currently live in Lók'aa' Niteel (Ganado), Arizona where I currently teach online Kindergarten and 2nd grade at Ganado Primary School (GPS) which is a part of Ganado Unified School District (GUSD). This upcoming 2021-2022 school year will be my seventh year as a teacher and will mark my seventh year at GUSD with six of those years as a 2nd grade teacher.

Context and Rationale

Classroom Demographic

This new 2021-2022 school year has led to many changes within our school and with my position at Ganado Primary School. At the beginning of the 2020-2021 school year, and onward the administration noticed a drop in enrollment among the second grade and made it known to the second grade level that one teacher may need to transfer within the district. Due to low enrollments, a fourth second grade teacher wasn't needed and in an effort to make budget cuts, the teacher cut was being made in my grade level. The second grade team went the whole year with this information in the back of our minds and it wasn't until the end of the 2020-2021 school year that it was brought up again. Since none of my colleagues were discussing who would move, I volunteered, especially since I saw that the Art teacher was an open option. I communicated to my Principal at the time about my decision to be the one to move within district to the Art position, but I was told that the decision wasn't final and that we'd see what would happen. All summer long I hadn't received an email or a call about the decisions being made and then in late July when I went to enroll my child in her second year of Pre-Kindergarten, I was told that I was the new Art teacher.

The news caught me off guard and at that point our school was going through a lot of changes. Our principal of 5 years resigned, and the school Counselor resigned as well. The new principal tried her best to keep me in the Art teacher position but with the new schedule the earlier prediction from the administration about low second grade enrollment proved to be the opposite. The 2nd grade enrollment numbers were the highest amongst the other grade levels at the primary school with many parents opting for their child/children to be in the online distance learning class. Though I had been initially moved to the position of Art teacher, all other positions within the primary were/are closed for any new hires. My new position in Art was short lived because with the hiring freeze and the high enrollment of second graders, as well as an unanticipated high enrollment of online schooling, an online teacher was needed. I let my new principal know that I would go where I would be most useful, though I wanted to stay in Art and now my current position is online teacher for Kindergarten and second grade with me leaning more toward the Kindergarten group. I am still in the teetering and tottering of a full transition of me being the sole Kindergarten teacher while a long term substitute is the second grade teacher, but after today, September 13, 2021, I am not so sure that the expectation of me being the Kindergarten teacher is going to be fulfilled.

Usually my students range from 6 to 8 years of age with most, to all being Diné and living on the Navajo Nation with either their parent(s), grandparent(s) or other extended family members/caregivers. This year my students will range from 5 to 8 with the ethnic and familial demographic remaining the same. In my 6 years of teaching at Ganado Primary School (GPS), three-fourths of my students are either cared for by a single mother, their grandparent(s) or the extended family members/caregivers, while the remaining fourth are within a two-parent household. GPS receives grants from Titles I through V. I am not entirely sure if we receive funding for Titles VI and VII but our school also meets the needs of Native American and McKinney-Vento Educational assistance to students within our building and district. The GPS community is a part of Fort Defiance Agency. It is within Apache County and serves students from Navajo County as well. GPS also services students living as close as 100 yards to as far as 40 miles away with one-way bus rides ranging from 15 minutes to an hour and a half.

Ganado Primary School, which is a part of Ganado Unified School District #20 (GUSD), is included in the district's School Improvement Plan due to the secondary grade levels receiving a low letter grade from the Arizona Department of Education (ADE) based on achievements in the AzMERIT summative assessments. During my employment at GPS, I have noticed that GUSD has consistently reported low scores on the AzMERIT from Middle School on up to High School (Dobias, Burns, 2019). District collected data also shows that grades at the elementary level have not been the best but have been relatively higher than the secondary grades (Dobias, 2019). In addition to the low test scores, viewing statistics of Title I schools from 2002 show that 67% of Title I schools are elementary grades covering 1st to 6th, with the need for Title I status gradually reducing in percentage in the upper grades (U.S. Dept. of Ed, 2002). More than half of elementary schools in the nation are Title I and I am willing to bet that 100% of schools on the reservation are classified as Title I through basic observation of the low socio-economic status of the Navajo Nation. The Navajo Nation Department of Agricultural (2021) report that in 2020, the unemployment rate is 48.5% with the average household income being \$8,240. According to the Office of the Assistant Secretary for Planning and Evaluations (ASPE, 2021) the 2021 Poverty Guidelines present that, a single family household that makes \$12,880 and a family of 5 with an annual income of \$31,040 are at the poverty line. The correlation between poverty and education

quality is a concern of many (Ladd, 2012) and with this understanding it is very important that any method of relating and integrating any academic skills, especially math, with something fun and close to home would help with comprehension, application and motivation (McKinney, 2014).

In previous years, I would mention the communities from which my students come from, but this past year was very different in that we were online for the entire school year due to the COVID-19 pandemic that halted society around the globe. Many parents and families had to relocate due to there not being in-person school which for some, was reliable child due to the already scarce employment obligations. Although the pre-COVID unemployment rate for Navajo Nation residents was high, COVID made job scarcity rise on the Navajo Nation because of community and state wide shut-downs. I had three students in my class who were no longer within GUSD's service area, and were not even within the Navajo Nation at all because of COVID-19 and the shut-downs. Not only were some students not within the area, many did not regularly attend our online class meetings, nor regularly submit completed assignments. Part of this was due to lack of access to technology, lack of access to reliable internet, lack of childcare that prioritized educational meetings and assignments and also the shift from doing work on a screen as opposed to receiving in-class socialization, hands-on learning and the overall school experience.

As I go into the new 2021-2022 school year, I will be entering with a lot of work to do and with new perspectives of my students and of myself. I will need to study and apply the standards for Kindergarten and second grade and do so with the intention of providing my children with the best education that I can give them while also being kind to my own sanity, well-being and family obligations. This 2021-2022 school year has been tough so far. As I mentioned, I went from not knowing where I would be positioned, to handling three grade levels and four subjects each, then to two grade levels with 4 subjects each, then to one, and back to two. I have not brought a lot of my work home with me and I have struggled with writing this curriculum unit because of the lack of motivation I have had with my unclear position at work, with the large workload, and with the constant connections needing to be made with parents. I do feel that parent involvement is important, but the defensiveness of some has me burnt out by the end of the day. I am at the point where I am to really needing to apply the skills that I have accumulated through my teaching experience and put forth a lot of my efforts in a way that I am not stressing out too much.

Online Classroom

As mentioned, I am teaching online Kindergarten and second grade. I think I speak for everyone who has done online teaching, it is tiring. Then having two primary grade levels is a lot to handle in my opinion. I don't think I would have been able to get as far as I am in the school year without the help of my teaching assistant Ms. Chryse Wallace. She helps me grade and even took on teaching two subjects for second grade. She does interventions for my second graders while I take on the full brunt of Kindergarten.

This unit, would ideally work in the regular classroom setting and I would say that it can be done in one to one week and a half. However, with my online classroom I only have one hour and fifteen minutes a day for my regular class time. I provide intervention or tutoring time with my students, but only the same seven students take advantage of its offerings. So essentially, I am

only meeting with the majority of my students six hours a week. Here is the schedule for my online Kindergarten class, Monday is our ELA day, we work out of your myView Literacy by SAVVAS, a Pearson publishing company. We cover our literacy standards on Monday, but review parts of it every live session day. Tuesdays is our Math day, Thursdays is our Social Studies day and Friday is Science. We do not meet on Wednesdays, I need to keep it open for professional developments, professional learning communities with both the Kindergarten and second grade teams as well as time to catch up on paperwork. The Wednesdays sometimes do not feel like an open day at all, it definitely goes very quickly.

Why the Four Sacred Mountains?

At first I wanted to do this unit on music, and I was so set on that unit topic and excited about it. I wanted to incorporate music because I love listening to it, I love singing and I love the idea of teaching patterns through song and then I hit this large wall that I may have made myself. I didn't know how to go about navigating myself through teaching online Kindergarten as well as online 1st grade and online 2nd grade. I'm glad I didn't need to do 1st grade anymore but I still had two grade levels and one I was new to. I believe I could have continued and completed a unit on music if I didn't run out of steam, motivation and ideas about how I could tie the concepts together. I started to lose much of my motivation to accomplish that task when I began to try to tie in Kindergarten along with second grade standards. Kindergarten was not my area of expertise when I began and trying to incorporate Kindergarten and second grade standards with music and link them together all the while plan and teach and complete the paperwork that goes with early education was too much on my brain and nervous system so I attempted to do the patterning unit on weaving. I felt myself freeze, so I tried weaving as mentioned before, but I've never wove before. I don't know the stories, and the lessons that move with this beautiful art, and reading about it mid-online-teaching-panic didn't seem realistic to me. The unit wasn't moving in the direction of what I wanted to achieve with using the hundred chart and I was not moving in the direction toward the goals I wanted to achieve. Finally, in a dissociative episode where I sat at my kitchen table and gazed off in a stupor, I thought, Keep It Simple Sis! Why am I suffering so much and trying to make something so difficult to do online when I could just teach the basics, especially since I am now a Kindergarten teacher who has to teach THE BASICS. What are the basics? The four sacred mountains, the four directions, and the four colors and minerals that represent them. These are elements within our Diné culture that are central to our foundations of learning. In prayers, songs, and stories the patterns that preside are the ones mentioned, the order of the mountains, the minerals that represent them, their colors, and their directions, these are the basics that I want to teach and I want my kids to know and carry with them as they grow and gather more cultural information.

For me, I can remember the Four Sacred Mountains being told to me as far back in school as Kindergarten. I was enrolled in the Navajo Immersion Program that had been started at Fort Defiance Elementary which is a part of the Window Rock Unified School District, in 1986 by founders, Marie Arviso and Wayne Holm (McCarty, Nicholas, 2014). I began my Kindergarten and early elementary years having more than half of my day's instruction in the Navajo language. As I progressed through the grade levels, the amount of Navajo language that was used would decrease slightly. By my third grade year, I was being pulled out of class with several other Navajo Language Immersion students to receive Navajo only instruction in oral language,

reading and writing. From Kindergarten on to fifth grade when the immersion program ended I would recite the directions, and hear stories and learning connections made to the four directions and the four mountains that were placed in those directions. The patterns of the mountains have remained with me. I continued into middle school and high school with regular one-hour Navajo language classes that were not as rigorous as what I had in elementary, but regardless the pattern remained. When I attended Diné College and took Avery Denny's Foundations of Diné Culture, I was so incredibly thankful that I had the basic understanding of the directions, colors, and mountains because I learned about the parts of life, the parts of day, and philosophical ideations that go along with each direction. I learned of the placements and the value of this pattern within our life and home. I don't think I would have had as much ease in understanding the deeper parts of this pattern if I didn't already have the foundation presence of recognizing the elementary patterns of the mountains to begin with.

With this in mind, I want to at least present and give my Kindergarten students the basic understanding of the color pattern, time of day, and the mountain pattern to begin with. In my earlier paragraphs I wanted to go deeper with minerals and birds and such, but as I write, I think that keeping it down to a two or three minimum of learning the color, mountain and maybe time of day should be enough for my online group of kids. I have to keep in mind that most of my online Kindergarten students have not had formal schooling and are considered "behind" so I do need to ease up on what I can present, but maintain my high expectations.

Why Patterns?

As mentioned in the previous paragraph, mathematics is the science of patterns. Smith (2003) states that people pay attention to certain characteristics of things that are repeated or imitated because whatever is repeated may be important. One can assume that being hyper aware of repeated patterns is relative to survival. People had to focus on weather, attacks from animals, illness and growth in order to survive. People had to pay attention to all things around them and in order to thrive make use of what they could from the repeated patterns in which they noticed such as the weather and its effects on growth of food.

So why patterns for Kindergarteners? For one thing, I have learned that the inventor of the term "kindergarten", Friederich Froebels, was a mathematician who wanted to share concepts of math to children. He provided geometric shapes to kids at an early age in order to stimulate their observation of their forms and be appreciative of their presence everywhere. Then later would question them, and provide patterns with the shapes for the children to manipulate and discuss so they could carry that elementary information on with them toward more challenging and abstract concepts of mathematics (Banchoff, 1990). The first few paragraphs in Banchoff's article tells of the geometric shapes and their presence in Kindergarten classrooms and goes on to say that after the primary years, having concrete plane and solid shapes to observe and manipulate are no longer available in the rush to advance onto calculus and to which Banchoff later states,

"If we wait until students have developed a great deal of arithmetic sophistication (and a great many misconceptions) before we encourage them to think about solid objects and the interaction between different dimensions, we may be depriving them of the chance to appreciate the full power and scope of geometry." (Banchoff, 2003, pp. 14)

The Banchoff articles refers much more to shapes, volume and the mathematics that involve geometry. I am not a mathematician so a lot of the formulas in the rest of the article are out of my range of immediate comprehension, but I can understand that Banchoff is telling me that providing the concrete materials in relation to mathematics at an early age WILL be more beneficial than detrimental at the higher level of understanding.

In continuing with my search for early educational inclusions of mathematics, specifically patterning, I refer to an article presented by our seminar facilitator which is titled, Pre-school Children's Understanding of Mathematical patterns. The article is by Hutchinson and Pounara (2011) and presents patterning tasks and interviews to preschool aged children in hopes of gathering information to share that can benefit a more meaningful mathematical instruction by including the use of mathematical terminology and being aware of repetition and where growth can occur with a pattern.

Within this article we are introduced to where patterns may occur in early education (clapping, shapes, colors, words), types of patterns, and how we want children to be looking for patterns, or regularities within their daily lives and then begin to use mathematical inquiry to justify or describe that pattern. The article begins to place emphasis on the use of explaining patterns. Using terms like units, and how a color unit can create a pattern structure. It goes on to say that teachers need to intervene when a misunderstanding of pattern arises and teachers should be at the fore front of providing necessary interventions to bring more visibility and awareness of the structure of patterns and the language to describe them. I'm gaining that a teacher should utilize more vocabulary that helps describe what is happening to a pattern and how it remains in stasis which can then help children see and describe a change or its extension. I personally think that this makes a lot of sense. In my current Kindergarten class, vocabulary is needed, and from what I see as a 2nd grade teacher, building and providing at the Kindergarten level is needed. This means that I need to be hyper aware of the terms I use and model my observation of patterns while using the terms that are presented in these articles.

Reading into a reproduced chapter from a textbook titled, Helping Children Learn Mathematics (Reys, Lindquist, Lambdin, Smith, 2007) I am given another definition of math and patterns. In chapter 14 of this textbook called, Algebraic Thinking, "Patterns are an important part of mathematics because they help children organize their world and understand mathematics" (pp.338). A recurring theme presented here and with the previous articles is, ask questions. Not just any type of questions, but questions that help the child describe and explain their thinking. I'm noticing a pattern. Usage of vocabulary to help children explain what it is they're seeing and doing when it comes to identifying or creating and extending patterns either by color, shape, number or sound. The chapter also presents a paragraph about research promoting pictures of patterns to recognize, think about, describe and extend. I can understand this as a 2nd grade teacher, because I notice students having a hard time correctly answering a fill in the blank question on math tests. The fill in the blank question is usually a sequence of numbers following a repeated addition pattern. Most kids seem to not recognize the increasing or decreasing pattern of numerals within a given place value. I feel like I have sufficiently taught this, but I must be doing something wrong since this continues. I'm not one to teach to a test, but again, not being a mathematician, I didn't think to point out or bring myself to return to the idea of recognizing and vocally describing patterns and numerical patterns that were present until this seminar.

After adding the readings and new understandings of patterns to my repertoire and then realizing the reasons mathematicians wanted children at a young age to begin their mathematical journey, having children play with geometric shapes and notice more patterns on a numerical scale makes a lot more sense and affirmations to what I know I should be doing. I feel that including more pattern recognition and description into the education Navajo children by coming back to our Indigenous ways of looking for the patterns that we have in our culture is a great way of reconnection and practice.

Content Objectives

In this unit, I will be reviewing standards from English Language Arts/Early Literacy that cover the fundamentals of recognizing and using printed text, but mostly targeting the Math and Science standard that cover identifying shapes, and recognizing patterns. The presented goals can be achieved through constant repetition, classroom and at-home activities and enthusiastic presentation. The cultural and academic goals will need to be reinforced as daily habit in order for acquisition to be realized. I will be using the “I can...” objectives, which means that Kindergarteners will be able to recognize what they are asked to accomplish through stating, “I can...”

- I can read from top to bottom and left to right.
- I can describe the colors and sequence of a pattern.
- I can count one object at a time.
- I can sort by color or shape to create a pattern.
- I can tell the order of mountains by the color they signify.

Depends on the level of your children

- I can say the names of the colors in Navajo.
- I can say the Navajo names of the Four Sacred Mountains in order.

The “I can...” of this unit follow the standards and although we can share and have the students repeat after us, it is not guaranteed that the students will remember the order within the time frame of this 5 day, 3-week online unit. Everything depends on what is happening in your classroom as well as the speed at which your students are grasping and retaining information, as well as the support that students are receiving in the home. Not only will this unit include cultural activities and teachings, but will also attempt to centralize the value of identifying patterns while connecting the patterns to our cultural foundations. For the best results, the introduction of the mountains’ order, and pattern is the 5 day/ 3-week online unit, while the recognition of the names and colors should be practiced as frequently as possible throughout the year after this unit.

Patterns and the Four Sacred Mountains

In *Stasis and Change: Integrating Patterns, Functions and Algebra Throughout the K-12 Curriculum* (2003), Erick Smith states “we identify a pattern in that which we see repeating or imagine the possibility of its repeating.” In Diné culture, this stasis of constant pattern repetition

is evident in a lot of what makes our culture beautiful. The presence of patterns in relation to the four sacred mountains is one that is a linear pattern, but could be considered a cyclical repeated pattern. I've always felt that Diné lifeways are very closely related to mathematics because of the way it seems like we as Diné are always on the look for a pattern, whether it's in the weather, the seasons, lifecycles, or the way the planets move, we see the beauty in all of the natural progressions of stasis and change, the ebb and flow of life and include them in our songs, prayers and stories. Understanding the importance of stasis patterns in our Diné culture and the basic definition of what mathematics is, which is the science of patterns (Smith, 2003; Devlin, 1997; Stewart, 2017; Steen, 1990), it seems only natural to focus on what is the most common and well recognized pattern in our songs and teachings which are the patterns associated with the four sacred mountains.

In our origin histories, the mountains themselves have stood since the beginning of time. The mountains represent the strength of our survival, the strength of our people, the strength of our prayers, the strength of our language, and the time we have spent here on this land. In Devlin (1997) the prologue shares how in the Western view, Greek people held mathematics in high regard reserved for those of high intelligent pursuits. Math was not just for counting, measuring, and its everyday use, it was a means of aesthetic and had religious purpose and elements. As Diné, I would say that math is very much utilitarian, but the study of mathematics is not just for the intelligent, but for all masters of arts. Sand painters, weavers, shepherds, chanters, herbalists, all must know math and must observe and utilize patterns for their art. The belief that all people are intelligent and are capable of understanding the secrets and representations of patterns and numbers is inherent in Diné culture. We are made in the image of the Holy Beings, and we know that the Holy Beings are not above Diné. Teachings from my cheii tell us that Holy People make mistakes like we do, and we learn from them (Gonnie, 1996). The teaching and prayers we have received come from their intellect, and we as BÍla' Ashdla'ii Nihookáá' Diyin Diné (Five Fingered Holy Beings of the Earth's Surface) have the mental capacity to be as divine as they and to also make mistakes that we can learn from. I say this because, unlike Western philosophers who thought themselves of higher status than everyone else, we believe the opposite. We know that basic mistakes are made and it is okay to make these mistakes and learn from them because our Holy People did and in this we are supposed to be taught that we all have high intellect and we are all capable of achieving wonderful academic and artistic expertise like the Holy People who have passed their knowledge to us because like them, we are all Holy and divine. I appreciate the presence of Diné Cultural teaching at an institution like Diné College because this idea of every Diné having this intellectual possession is a taught to others as a means to continue our identity. This understanding is shared by Wilson Aronilth in his textbook, Foundations of Diné Culture (1991). On page 23, Aronilth shares, "As individual learners, our forefathers, said, we as Diné were already created with intelligence, knowledge and wisdom. It is up to us, however, to bring these out and learn how to use them..." He goes on to say that we do this through song, prayer and understanding our true Diné identities through the foundations of our culture and the process of the Blessingway Ceremony.

Number Patterns- Why Four?

On the topic of numbers, for most people who are familiar with the foundations of Diné culture, four is considered a well-known number as well as numbers that are multiples of two; female and

male, white and yellow corn, day and night, mother earth and father sky, good and evil. When it comes to sacred mountains, four are the main mountains. There are two more mountains making six altogether that are mentioned in prayer and song. Within the multiples of two and four, we also have twelve for the amount of deities that there are, and twelve for the number of feathers in the headdress of Haashch'éeýált'i'í or Talking Holy Being. The representations of things we consider sacred or very important to us have a numerical representation. I believe this is why I was completely immersed into the Dan Brown book, *The Lost Symbol*. The numerology, puzzles and symbols associated with numbers made me relate what I was reading to what is in Diné culture.

The pattern and number representation in our culture focuses on the basic four that allows for our cultural knowledge to be expanded upon. What I will share stems from what I have acquired from knowledge holders, Wilson Aronilth, Avery Denny, Johnson Dennison, Henry Fowler, Rita Gilmore, my mother Grace Tracy, my uncles Gibson, Gilbert, Leslie, and Dale Gonnie as well as Lorenzo Max. I have heard lectures from my professors at Diné College, read books and have attended ceremonies. What I hear I synthesize and ask my mom for clarification and we discuss how things are connected. A lot of what I will share are my own notices of patterns, but are often reinforced with my questioning for clarity. As we grow and acquire more knowledge, specifically knowledge about our prayers, chants and stories, the basic four begins to reveal themselves in a deeper manner. We no longer have the basic four directions, mountains, colors and seasons, we reveal four foods, the worlds in which our people emerged, ways of progress, stages of life, dimensions of space, time of the day, logs of the first hogan, and ways of cooperation. Stories, expressed in chant and prayer are layered and woven with knowing based upon the foundations these stages of four, and the simplest of them will help us slowly allow for our thinking and understanding to build and grow.

To me, my understanding of how we get to the number four is based on the duality of nature. Our understanding of night and day, earth and sky, male and female, hot and cold. We have to have two in order to have procreation. We recognize this two at the beginning of our prayers. “Kodóó hózhóo dooleel, shimá nahasdzaán, shítáa' yáidíhxił...” and it carries on to name the representations of two within our culture. Aronilth (1991) shares that it is important for us as Diné to understand who we are and that our self-image and self-identity are very important. As Holy Beings ourselves, we are created from male and female or our mother and our father, and the earth and the sky. We ourselves have male and female within us, regardless of the gender, and we know this because science tells us of the hormones we possess in our bodies, estrogen and testosterone. Aronilth, Denny, Gonnie and Max (1991, 2010, 1996, 2017) also tell that within each of us we have the left and right, male and female, Corn Pollen Boy or Early Dawn Boy and Corn Beetle Girl or Early Dawn Girl. We have the duality of nature within each of us. The male representation has the duality within them, the female representation has the duality within them, and in between, when the two meet and become one, the beauty of four is produced. It sounds gross and maybe even a little trans exclusionary, but the main purpose was to procreate. People of trans and two-spirit identity already possess the presence of duality within their one body from both representations. In possessing this, our trans and two-spirit family are divine in their own and are exceptional in that they possess the knowledge of all within their spirit in their onself and can move about and perform as either male, female or both (Zolbrod, 1984; Aronilth, 1991; Denny, 2010; O'Bryan, 1993). Aronilth reinforces this thought on page 79,

“One’s identity is incomplete until his or her essence and existence are explained and understood...Early Dawn Girl is our self-image, while Early Dawn Boy is our self-identity. If we understand what these two Holy People stand for, then we learn about our essence and existence of life.”

Since existential understanding is the goal, we then can understand that the meaning of four is in response to the coming together of elements to create meaning to life. Whether it is an idea, plants or animals there has to be a beginning. I think that this is very interesting in that, our people understood the importance of continuing and acknowledging our existence as precious, and as being represented by all that is around us as well as continuing ideas and thoughts to achieve its full potential. Knowing that everything else can achieve growth, we have gone to representing stages of growth and the cycles of birth, growth and death in the representations of four from two. We can now predict from our observations that there is a pattern of growth that extends to the six sacred mountains and then to the number representation of twelve.

Stories of the Four Sacred Mountains

There are many stories in Diné culture that include the Four Sacred Mountains. Many of our songs and prayers acknowledge six mountains due to its foundational nature. In our class, and in the elementary classrooms I was in as a child, I was taught of the four mountain’s names, and colors, and I choose to do the same in my elementary classroom.

The Four Sacred Mountains are important to know because they symbolize the home in which we receive safety. The earth is the mother of our people, and the sky is our father, while the mountains are the logs that make up the hooghan (home) in which we live. They create the support for children to “develop physically, mentally, emotionally and spiritually” (Salabye, Jr., Manolescu, 2016). Aronilth also tells that the mountains are four mountains, six, and twelve mountains that we hold sacred, “these mountains are our thinking, our knowledge, and our ways of life”. The presence of the mountains on this earth is held in high regard because of their age. We know that they are millions of years old, they have seen many ages to which we cannot fathom. The mountains have been standing for millions of years and hold the patience that we work hard to possess. The mountains have seen and heard all walks of life and hold knowledge that we work hard to possess. The mountains have been standing for millions of years and hold strength that we work hard to possess. We see these monuments as beings that we want to emulate. Our stories and prayers associate white shell, turquoise, abalone and black jet or obsidian with each mountain. The Holy People carried baskets of each mineral to each mountain and dressed them up in these jewels, and in turn, we dress ourselves in the same jewels to harness and emulate the same patience, knowledge and strength the mountains possess from their millions of years between the earth, our mother and the universe, our father (Gonnie, 1996; Aronilth, 1991; Salabye, Manolescu, 2016).

Each mountain is placed in the directions they are in accordance with the sun’s path. All things begin in the east to greet the warmth of life from the sun. Hayoolkáál, early dawn begins with the white line of light from the sun on the eastern horizon. It is when the Holy People are present and bestow gifts to those who are awake, run and pray at this time. Since the sun is considered male in Diné culture, it is greeted by the female mountain, white shell was presented and adorned

the mountain by the Holy People upon its creation. The mountain holds the inner being of Bits'íís Łigai Ch'ikeeh, White-bodied Young Girl. She is dressed in clothing covered in white shell to harness positive thoughts and thinking, to which Changing Woman followed by also adorning herself in white shell. The belt of this female entity which also goes by two other names, was made of dark reeds, to which the mountain received its name, Sis Naajini, Black Belt Mountain. This mountain was secured into the earth from the sky with lightning (Gonnie, 1996; Aronilth, 1991; Salabye, Manolescu, 2016).

The sun moves from the east overhead shifting toward the south. Nihodeetł'iizh is the middle of day when the sky is blue. Following an alternating pattern of male, female, the southern mountain is male, turquoise was presented and adorned the mountain by the Holy People upon its creation. The mountain holds the inner being of Bits'íís Dootł'izhii Tsiłkeeh, Turquoise Bodied Young Man. He is dressed turquoise and the hide of a female deer, the turquoise harnessed health plans, learning and positive, clear life goals. Turquoise-bodied Young Man was created from the tongue of the East, and so is called Tsoodził, Tongue Mountain. This mountain was fastened to the earth with a blue stone knife (Gonnie, 1996; Aronilth, 1991; Salabye, Manolescu, 2016).

Following the path of the sun we continue to the west. Nihootsoi which is the evening when the sky is a yellow-orange from the setting sun. The western mountain is female, presented with a basket of abalone gems to be adorned by the Holy People. The mountain holds the inner being of Bits'íís Łitsooi Tsiłkeeh, Abalone-bodied Young Man. He is dressed with abalone shells and a female kilt woven of dark yucca, the abalone harnessed understanding of social unity and life. The wind on the abalone shell made movements on the mountain that looked as though it was radiating heat and this is where it receives its name, Dook'o'ooshíid, Heat and Light Radiating Mountain. This mountain was fastened to the earth with sunbeams (Gonnie, 1996; Aronilth, 1991; Salabye, Manolescu, 2016).

The path of the suns ends in the north. Chahałxeel is the darkness of night. The sun has set and we see the dark skies and the twinkling of the stars. The northern mountain is female, presented with a basket of black jet or obsidian to be adorned by the Holy People. The mountain holds the inner being Bits'íís Diłhxił Ch'ikeeh, Black-bodied Young Woman. She is dressed with black jet and a cotton kilt. The black jet harnesses positive self-awareness for protection against danger and evil. The Holy People have hunted for game on this mountain and found many mountain sheep to which they named it, Dibé Nitsaa, Big Sheep Mountain. This mountain was fastened to the earth with rainbow beams for peace and harmony (Gonnie, 1996; Aronilth, 1991; Salabye, Manolescu, 2016).

The mountains represent many things, and we try to take on the characteristics each mountain possesses. Many deities live within the mountains and we respect and pay homage to them by recognizing the mountains' names through song and prayer. What has been shared is the foundation of many more stories within ceremonies to which greater stories and lessons expand upon.

Teaching Strategies

Teaching strategies that I have for this year will include whole group and independent work the most being that I am the online teacher for Kindergarten and 2nd grade this year. I would like to work in small group instruction and will plan strategies that can utilize small group, but with scheduling, I will do my best to include small group as well as individual instruction.

Whole Group- Online Instruction

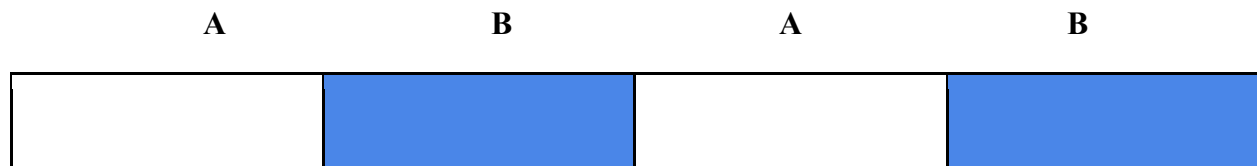
Majority of our class sessions are whole group. We meet online at with, at the most 22 students present at our daily session. Having so many students and just myself running Kindergarten, breakout sessions and small groups aren't too likely within the one hour and fifteen minutes that we have together. Modeling is going to be a major strategy here. The kids will be viewing what we do as teachers and will need to hear what is being shown with lots of thinking out loud and lots of descriptions.

Story Telling

There is no printed literature for younger children that cover the four sacred mountains. Our culture is one that is oral and are passed down by generation. Living in this Western world with westernized standards of educational instruction, printed text is a must for literacy. Oral language and storytelling is just as important for language acquisition. I have made a Jamboard of the basic order of the four sacred mountains. This presentation can be shared and is uses words that are repetitive for new readers. This story can be read and shared to the students, as well as our own understanding of the stories of the mountains that are shared in this unit.

ABCD Patterning

Before presenting the mountain information, the colors and names and the concept of its pattern, we must first discuss types of patterns. When showing shapes or colors, please discuss your thought processes out loud. Show either an AB color or shape pattern. This means showing either white, blue, white, blue, white, blue or circle, square, circle, square... and asking for the kids to complete the pattern. "What do you think will come next?" Allow for some to answer, and if none are able to, vocalize your thought process of seeing a UNIT. A unit would be where you see a group and how it's repeated. In this case, your unit is the AB, and then it is repeated as AB, AB, AB, AB... and so forth. Add on another color or shape to create an ABC pattern. This looks like white, blue, yellow, white, blue, yellow, white, blue, yellow, or circle, square, triangle, circle, square, triangle... and vocalize that each different shape or color is represented by the A, B, C, which is what makes it an ABC pattern.



Please use vocabulary that will help the children better piece their thoughts and processes to that of mathematical terms. We are the leaders that are providing tools to succeed, and being well

rounded in vernacular that can better describe our mathematical actions is what we should be attaining as educators. Describe the pattern, the unit, the repetition, adding one more.

From here, we can then add another color, or another shape to describe the ABCD patterning. Here is where we can transition into utilizing the colors of the mountains. We have slowly transitioned from using two of the colors, to three of the colors, and to all four colors of the mountain sequence.

Modeling

I do, we do, you do...

The I do, we do, you do, method involves the teacher showing and telling what is being done, then allowing the students to also partake in what is being done, finally the students are then given the task to do the work on their own. In this case, this would be saying the colors in order, as well as the names of the mountains.

Compacting

This strategy is a part of differentiating instruction which compacts an activity to meet a student's skill. With my online kids, there are a lot of students who are further along with their academic progress. Some kids have used scissors, pencils, and glue often and have developed a lot of distal strength. Then I have some kids who have never used scissors, and who do not have the fine motor skills to perform some of the same tasks. In this case some assignments are modified. The assignment of the tracing and cutting of the mountains on construction paper, I understand that tracing may be difficult for some at this time, and I do not want to discourage the kids, nor do I want parents to lose patience with their kids when doing this activity which requires love and patience for positive retention. I make it known to adults and parents that if their child is able to trace and cut the smaller corners then he or she may do so. If it is noticeable that a child is unable to trace, then the adult can trace and the student can cut. If the student can cut, but has a hard time with corners, then the adult can do the corners for the child all the while all tiers of ability should have the adult MODELING how to do it for the child to see and mimic.

When students are in the classroom, monitoring and understanding the levels of the student's abilities is at the discretion of the teacher. Most classrooms have 20 students and one teacher and maybe one teacher's aide. If this is the case, compacting can be done by splitting the children into smaller groups where completing tracing and cutting can be monitored and achieved. The same can be done with the making of paper beads for the next activity. The beads can be done by the kids if ability permits or can be prepped by teachers, or can be assigned as homework to be done with the parents.

Classroom Activities

In following some of the tasks presented in the Hutchinson and Pounara (2011) article, I thought I flip their tasks and do it somewhat reverse order. I would present a pattern to them, which is the repeated pattern of the mountains' colors. I would have them make the pattern, then allow them to try to mimic the pattern and continue the pattern unit and the ABCD patterning, and then

allow them to create their own patterns with three different shapes but using the same color schemes.

For the hands on activities, prep work took about 2 hours. For each packet that was picked up for at-home work you will need: one traceable mountain pattern, traceable patterns of the following; one circle, one square, one triangle. One 36" string, one sentence strip with top and bottom written at the top and bottom. One sentence strip with the words left and right written on the left and the right. You will also need to prepare construction paper. Two sheets of each color are needed; white, blue, yellow and black. Students should already have glue (stick and white), scissors, pencils, paint and a ruler. I asked the kids and adults ahead of time if they had paint, if they said no, then I made sure to gather watercolor palettes that were not being used to give out with packet pick-up.

Story Jamboard

As mentioned in the Teaching Strategies section, printed text is important for literacy and since there is no printed text that aims to the primary grades I have created a Jamboard that covers the basics of the four sacred mountains. It can be read to the group and shared for parents/adults to read with the children and for children to see repeated high frequency words.

Mountain Songs

The inclusion of singing mountain songs is to the discretion of the teacher. I have been told by my professors at Diné College have told me that the songs that are sung, are not to be kept secret from our own people. They can be sung and should be as celebration to what keeps us strong and thriving. In my time at Diné College and my time attending ceremonies I have in my knowledge two mountain songs. The sing about carrying the mountains with us and about thinking about the mountains. I sing these songs whenever I leave the boundaries of the mountains. I do this and now my own 5-year-old is familiar with these songs and the need to sing them when we are on our way to Albuquerque. She now recognizes Tsoodzil and asks if I am going to the sing its songs. She now helps me sing them. It is quite easy for a child to pick up because of its repetitious nature.

If you are non-Native I suggest not teaching these songs. If you are Diné and don't know these songs but would like to hear the two that I know of for your own use and practice to later share with your own children, please use my information in the Author's Note.

Mountain Order Sentence Strip

This activity calls for some premade or teacher made items. I have made tracing patterns of mountains, and placed them in a packet with construction paper for the kids to take home and complete the assignments since I have an online class. One traceable mountain pattern, and one sentence strip with the words top (at the top), and bottom (at the bottom) written on the sentence strips are handed out was included. Students will also need one sheet of white, one sheet of blue, one sheet of yellow, and one sheet of black construction paper. In this activity, it should be emphasized that when reading numbers or words we move from top to bottom. I try to instill

writing numbers and letters from top to bottom. I do have students who do their work with their parents, but the idea of pencil control and the legibility of letters and numbers when written from top to bottom is not as obvious to parents as it would be to teachers. As teachers, we have to instill that we have more control over our pencils when writing top to bottom. We also need to emphasize that when reading we move from left to right and top to bottom when reading.

Students or adults will trace the mountain pattern onto the colored paper. Please use COMPACTING here if needed for student’s ability level. Students will then cut out the traced mountains. The names of the mountains can be written onto the cut out mountains and then the cut outs will be glued to the sentence strip in order from top to bottom. When students refer back to their mountain strip, they will then need to remember that they are reading top to bottom.

Paper Bead Necklace

This activity reinforces what was practiced in the mountain strip activity. Here we’re putting distal-fine motor coordination back into use. I have had students who may have not had a whole lot of fine motor practice and I wanted to include as much as I could. Here students or adults will make paper beads. These are very easy to make for adults, may be challenging for some students. Either way, all students can be included. A YouTube-how-to video will be included with this assignment. Adults will use a blank sheet of lined paper, or blank solid white paper, it depends on what is available at home. Adults will trace the long Vs needed for rolling the paper. Students can cut out the paper to assist, but adults must MODEL the whole process for students to see.

Pattern Sentence Strip

In this activity you will need the sentence strip with the words left and right written on the left hand side, and the right hand side. Students will use the various traceable shape patterns and will trace each shape on one white sheet of construction paper. Students will then trace each shape on one sheet of blue, then yellow, then black. In all students should have twelve shapes; four square (white, blue, yellow, black), four circle (white, blue, yellow, black), four triangles (white, blue, yellow, black). Students will be tasked to make their own pattern. If they follow the order of color that’s great. The point is for them to make a pattern and explain it and the pattern sequence it follows. The pattern sequence explanation can come from the teacher when the student is explaining. Point it out by saying something like, “Oh wow! Nizhóní, look how you made an ABCD...”, or ...AAAABBBBCCCCDDDD pattern” if they do not immediately state the unit of pattern that was expressed. Show enthusiasm for their achievement. Compliment the way they cut the paper, the straight lines they may have traced, and that they built or read from left to right.

Student Assessment Plan

Learning Goal	Assessment	Assessment Format
Students will be able to identify the order of the colors of the mountains.	Formative Pre-Assessment	This may be done by setting four colors in front of a child, perhaps blocks, or cut outs. In

		my case, I simply asked in a Google Classroom question as my attendance tracker. I asked parents and adults to not prompt their children or give any answers or clues as to the order.
Students will trace and cut our mountains on construction paper of white, blue, yellow and black. They will put them in order from top to bottom on a sentence strip. If ability allows, copy names of the mountains on each.	Formative Assessment Activity	This will be a quick reinforcement but also a measure of their knowledge of the order of the colors and mountains.
Students will create paper beads and paint them the four colors. Students will be required to make a pattern using the colored beads.	Formative Assessment Activity	Here is a measure to see what type of pattern can be created with the colors.
Students will trace and cut out various shapes of the four colors. They will have to glue them to a sentence strip or put them in any order they see fit. Ideally, we'd want an ABCD of the four colors. They will then explain their pattern and why they put it in the order they chose.	Formative Assessment Culminating Activity	Traceable shapes and construction paper of four colors will be given for the students to trace, cut and order themselves.

Alignment with Standards

Kindergarten Arizona Common Core State Standards

K. RF. 1a-f Demonstrate understanding of the organization and basic features of print.

- a. Follow words from left to right, top to bottom, and page by page.
- b. Recognize that spoken words are represented in written language by specific sequencing of letters.
- c. Identify that a sentence is made up of a group of words.
- d. Recognize the difference between letter and a printed word.
- e. Understand that words are separated by spaces in print.
- f. Recognize and name all upper and lowercase letters of the alphabet.

K.SL.4 Describe familiar people, places, things and events and with prompting and support, provide additional detail.

K. CC. B. 4 Understand the relationship between numbers and quantities; connect counting to cardinality.

K. CC. B. 4a When counting objects, say the number names in the standard order, pairing each object with one and only one number name and each number name with one and only one object (one-to-one correspondence [A, B, C,D]).

K.MD.B.3 Classify objects into given categories; count the number of objects in each category and sort the categories by count. (Note: limit category counts to be less than or equal to 10.)

K.G.A.2 Correctly name shapes regardless of their orientations or overall size. (e.g., circle, triangle, square, rectangle, rhombus, trapezoid, hexagon, cube, cone, cylinder, sphere.)

K.G.B.4 Analyze and compare two dimensional shapes, in different sizes and orientations, using informal language to describe similarities, differences, parts and other attributes (e.g., numbers of sides and vertices/corners)

K. SP1. 2 Explore how events of the past affect student's' lives and community.

Department of Diné Education Character Building Standards

Concept 2 – Self-identity: PO 1. I will listen and observe cultural teachings.

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