

Wildlife, Plants, and Habitats of the Southwest

Volcanoes On Land and In The Ocean

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Diné Institute for Navajo Nation Educators (DINÉ)

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Author Note:

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Context

Flagstaff High School (FHS) generally has between 1,500 and 1,800 students enrolled annually. The school's enrollment numbers have decreased since the COVID-19 pandemic and a major shift in administration. We generally have a principal and two assistant principals. This year we started out with an assistant principal that had only been in her position for one year. In 2021, FHS' enrollment was 1,592 (Arizona Department of Education, 2022). The registrar of FHS shared the following demographics for 2021. Of those that attended FHS, 1,580 were promoted to the next grade level with 376 seniors graduating and twelve of our seniors being retained and nine dropping out. They also reported that FHS had a large number of students transfer (167) throughout the year and that this number is highly unusual for our school.

Another statistic of significance that impacts Flagstaff High School is 23% of our student population is considered low-income. Our largest group of struggling students is Indigenous and Hispanic males. The lower quartile at Flagstaff High School has been established in the past by reviewing ACT suite scores, grade point average, and transcripts from the prior school year. It is recommended a combination of factors be considered to determine which students may benefit from extra assistance. For example, students who have low ranking ACT tests scores, a grade point average below 2.0, transcripts that indicate consistently failing grades in core classes (core classes are English, math, science, and social studies), have decent attendance and no disciplinary referrals is a student who may benefit from extra assistance. In other words, the student does not necessarily have to qualify in every area to receive extra assistance or be considered lower quartile. Once a student is identified, the student's historical background is reviewed. We look into how many schools the student has attended, does the student have an Individual Education Plan (IEP) or 504 plan, has the student struggled with chronic health issues, or are there any other underlying issues we need to consider and monitor? We know from our data, the highest dropout rate for our student body is Indigenous and/or Hispanic males.

Some of our students travel from different locations in the region to the Bureau of Indian Affairs (BIA) Kinlani BorderTown dormitory. Residency in the Kinlani Dormitory ensures students entry into Flagstaff High School. This dorm was built in 1958 to accommodate 300 students, in grades Kindergarten through twelve, and offered admission into schools in Flagstaff. The dorm no longer provides services for young children. It is currently considered a "home living program" and houses only high school students. During a regular school year, we have approximately 160 students from the dorm; that number has been greatly reduced due to COVID-19, cutting enrollment to half the usual number. The dorm serves students from the Four Corners' region: the Navajo, Hopi, Havasupai, Tohono O'Odham Nations, and other locations. The students who live in the dorms must maintain a 2.5 grade point average or higher. This grade point average is based solely upon science and English grades. Once the school year begins, students are expected to maintain that 2.5 grade point average (Cyberschool & IES Inc., 2022).

At the beginning of this school year, it was announced the dorm would not be open on the weekends due to a lack of staffing. Students now return home on Friday evenings and come back to the dorm on Sunday afternoon.

The dorm has approximately thirty employees to assist students during their stay. Flagstaff High School works closely with dormitory administration to support students and encourage them to meet the Kinlani dorm philosophy:

Support educational policies by guiding Diné/Navajo and Native American youth to receive an essential education and be compatible in today's society. Students are provided with a comfortable residential environment where they will meet the demands of our current educational system to develop self-awareness, learn to be self-sufficient, build self-confidence, learn to appreciate the values of life and become self-motivated to achieve their endeavors. Students will be prepared to meet the professional expectations and standards for their daily lives. (Cyberschool & IES, Inc., 2022).

In addition to supporting the philosophy of the Kinlani dorm, Flagstaff High School staff endeavors to assist students in meeting its current mission which is “to provide a comprehensive education that encourages excellence and cultivates in each student those skills and attitudes necessary to become a successful citizen with personal integrity in a diverse world” (FHS Course Catalog, 2021-2022). Our staff is committed to ensuring our students are prepared for post-secondary life. This is also reflected in the FHS vision statement: “The mission of Flagstaff High School is to graduate all students academically prepared to harness postsecondary success” (FHS Course Catalog, 2021-2022). This may look like attending a technical school, a community college, a university, or going straight to work for an employer. We believe all avenues have the potential to propel our students into a successful future. In addition to our academic focus, Flagstaff High School has a number of research-based programs the school utilizes to ensure that each student receives a well-balanced education and is ready to contribute to any community in which they choose to live. These programs include Positive Behavior Interventions and Supports (PBIS), Stewards Observing and Advocating Relational Responsiveness (SOARR), Universal Design Learning (UDL), and Restorative Practices.

This Oceanography course will allow students to study the physical, chemical, and biological aspects of the oceanic environment. Students will study the historical exploration of the ocean. They will explore the formation of the ocean basins, waves and tides, currents, weather and pollution, coral reef systems, estuaries, and much more. The spectrum of ocean life and lifestyle zones of the ocean will be studied and examined through lab activities. Critical analysis of coastal and oceanic degradation will be studied in marine ecology, along with the impact of humans on the marine environment and the effects of those impacts (FHS Course Catalog, 2021-2022).

This class is open to 9th-12th grade students. It is a reading and writing intensive course that was first developed by my colleague, Kayce Klecker. While the class is open to 9th graders, it is often not available to them because our 10th-12th grade students are given priority and quickly fill the sections during registration. There are no prerequisites for the course and it is used as an elective course by some students. Students often take the class because they have interest in the ocean or need a recovery credit to meet the state requirements for high school graduation. Ms. Klecker has taught two sections of Oceanography since its inception. This year the class has been expanded to five sections. Ms. Klecker also arranges a trip to Catalina Island in the spring. If students elect to participate in the Catalina Island field trip, there is an additional cost and students must raise their own travel funds. (Opportunities are provided for students to fundraise for this experience.) Even if students decide that they do not want to travel to Catalina Island, there are a multitude of other oceanic experiences to participate in over the course of the year.

I have altered the curriculum to include culturally responsive teaching methods. My class will first be introduced to local topics that can be integrated within the broader subject of oceanography. For example, the geographical location of Flagstaff lends itself to topics such as plate tectonics and volcanoes. The class will first investigate subject matter like volcanoes that are immediately relevant to our area that can be expanded upon to connect to the larger overarching topic of plate tectonics. This will allow the students to experience how seemingly unrelated information can be related. It will provide them with the opportunity to make connections beyond their local environment and explore the world at large as it relates to the ocean.

Rationale

I am a strong believer in Maslow's Hierarchy of Needs which defines students' basic needs as food, water, shelter, sleep, and oxygen and says that these must be met for them to be successful. I have applied this concept repeatedly over my lengthy career. It has helped me to gauge student readiness because I know that when my students have what they need, they are successful. Many of our lower quartile students struggle with getting their basic needs met and the COVID-19 pandemic has made it even more difficult for students to feel safe.

The Flagstaff High School Indigenous population faces many additional challenges beyond the basics. The students who reside in the dorm may have left home for the first time. They may only get to see their families on the weekend due to COVID-19 and/or other socio-economic factors. Students who attend Flagstaff High School and who are not part of the dorm population, may have to travel an hour or more in one direction to attend classes; for example, students that live in Leupp, Cameron, Tuba City, or Gray Hills. These same students may opt to hitchhike if they miss the bus. Parents, in a desire to offer their students more, have relocated to Flagstaff only to find the high cost of living means that not all their needs can be met. Most families prioritize

shelter; therefore, their food supply is limited. Educators and families may struggle with maintaining consistent contact to discuss student needs due to unavailability of the parents, or a lack of technology and the unpredictability of connection for service.

In addition to getting basic needs met, many students are struggling with a lack of stamina (Desautels, 2021). During the height of the COVID-19 pandemic, students were forced to learn via ZOOM. Even the best practices of ZOOM instructional strategies deprived many students of the necessary engagement or focus that is required when sitting through an entire in-person school day. During the ZOOM sessions, students were able to check out, play games simultaneously and only sporadically focus on academics. Test scores at the high school level indicate a definite drop in students' academic performance. Despite these challenges, FHS is still ranked one of the top four schools in the city of Flagstaff with a 95% graduation rate and an enrollment number that far out-distances any other schools in the immediate area. It is also ranked the best high school in the Flagstaff Unified School District. We are home to a very diverse student population; 51.2% of our students are minorities. Here is the breakdown of student enrollment: 48.8% is Caucasian, 25.6% is American Indian/Alaskan Native, 20.7% is Hispanic, 2.6% is of two or more races, 1% is Asian, 1% is African American, and .3% is Native Hawaiian/Pacific Islander (U.S. World News and World Report, n.d.).

Positive Behavior Intervention Support (PBIS) is a proactive approach to behavioral expectation with built in natural consequences. Behaviors are taught and positively reinforced; thereby, becoming the standard practice that defines the school climate. Students in the lower quartile need routine and they need to have explicit behavioral expectations with consistent natural consequences. Unfortunately, due to the high administrative turnover in the last few years, the FHS PBIS program has languished. This has left a higher than usual number of lower quartile students, predominantly minorities, struggling to excel academically. Following the COVID-19 pandemic, all students needed a functional, authentic PBIS system and we did not have that in place for them. We are currently working to rectify this situation.

A review of school data indicates Native American males and Hispanic males represent the highest number of lower quartile students. During a Hispanic focus group workshop last year, one of our students shared his thoughts, "That the school system expects for everyone to fit into a square peg but we are circles and we don't fit." Another student shared, "No matter how hard I work, I can never measure up to the expectations."

FHS staffs' response was to provide more mentorship opportunities by having a ratio of three students per teacher to monitor each student's progress more closely. This created positive, caring relationships and increased lower quartile students' feeling of belonging. Parents and extended family attended an end of year celebration and for many it was the first time that their student had ever been celebrated within a school setting. The celebration committee took to heart

the comments of students in the focus group and celebrated successes that were not all classroom related. Some of the celebrations included students who had shown behavioral improvement (i.e. less tardiness or fewer absences and fewer referrals for inappropriate behavior). Students were also celebrated for achieving their best, even if their best was only an improvement from a 59% to a 60% (Garcia-Loehr & Sorden, 2022). Student success should be looked upon and measured individually for every student.

In my classroom, behavioral expectations are known and consistent. While PBIS was not taught schoolwide, I did teach it in my classroom. Teaching PBIS provides me with an opportunity to get to know my students and their past histories better. It is an opportunity to open doors that may otherwise remain closed. Consistency, I have found, is the key to success for many students. Students thrive when they understand expectations and consequences. Boundaries are established to ensure students feel safe and the environment becomes inclusive to meet everyone's needs.

Stewards Observing and Advocating Relational Responsiveness (SOARR) is another component of my teaching philosophy. It originated at FHS over the course of three years of data collection based upon observations, surveys, reports reviewing attendance, discipline, and student patterns. Flagstaff High School educators, Kinlani Bordertown Dormitory staff, Flagstaff Unified School District #1 staff, and Northern Arizona University community collaborated to provide input to the project. SOARR is meant to serve all staff and students at FHS by illuminating Indigenous knowledge and practice. By infusing SOARR philosophy into their lessons, teachers create an intentional foundation of culturally responsive pedagogy.

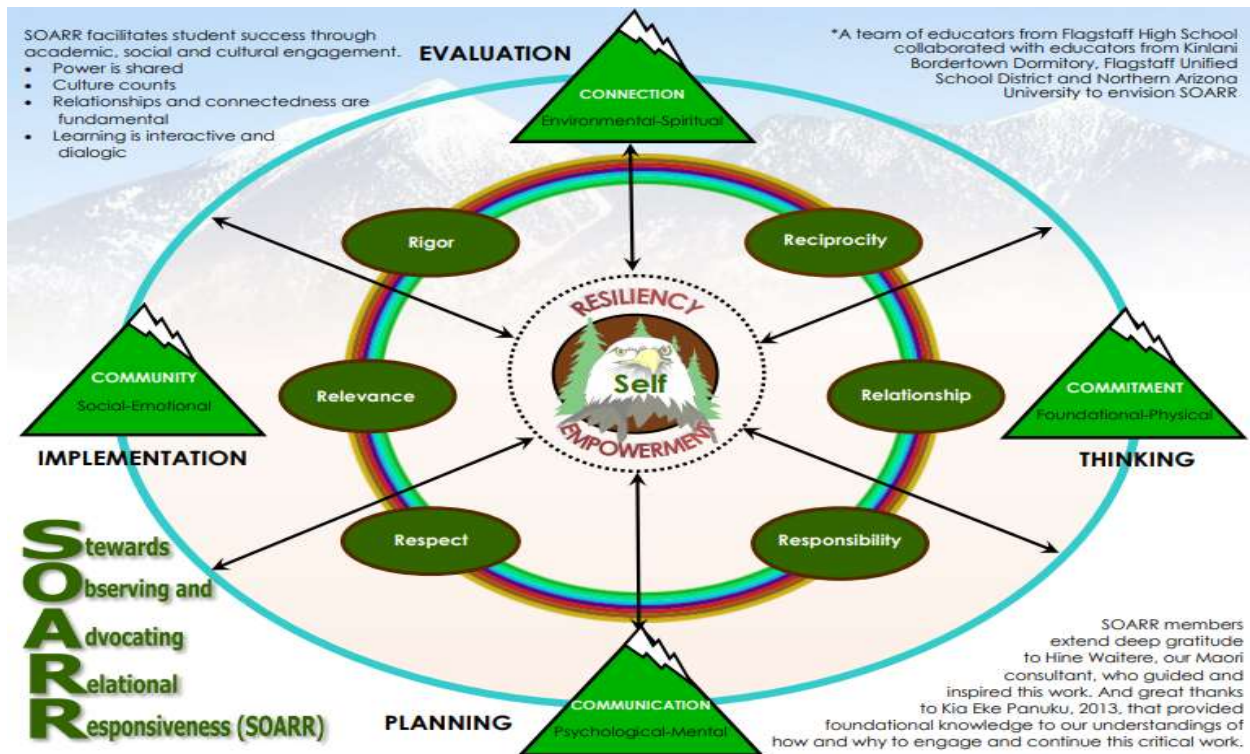


Figure 1. Stewards observing and advocating relational responsiveness (Source: Flagstaff High School et al., 2013)

Educators often focus upon gaps in standardized performance measures to determine what a student is missing. This in turn leads to an exaggerated emphasis on deficits and the use of outdated methodology like reciting and memorizing content. The SOARR philosophy requires educators to shift their thinking. SOARR is not about deficits but instead about what life skills students' own, what skills they need, and what skills they want to have prior to graduation. Faculty discussions revealed that instead of focusing on student strengths or skills, teachers were inadvertently asking our students to leave both of these at the door. In the intervening years, I have learned from my peers the importance of knowing and understanding where a student stands. By acknowledging a student's place of abundance, I am able to help guide them to achieve the next level in their journey. It is important to acknowledge and support students' strengths so they can use them to help them continue to grow into productive members of society (Flagstaff High School et al., 2013).

The SOARR model allows me to put into practice the basic principles associated with culturally responsive teaching: awareness, learning partnerships, information processing, and community building (Hammond & Jackson, 2015).

Maya Angelou once said, "Every person needs a place that is furnished with hope," that I believe it really important for teachers to remember about their students (Angelou, as cited in Hammond & Jackson, 2015).

I believe this statement says it all. If our students are to be successful we must teach them to become part of a larger community; a community in which they feel connection. This is the goal of the SOARR project, to create a community that encourages students, families, teachers, and staff to feel welcome and that they have a voice in their own learning and growth. We want students to engage in a model that is continuous and allows them to feel empowered. SOARR by its very definition facilitates success through academic, social, and cultural engagement. It encourages all participants to share power and understand that culture counts. Relationships and connectedness are fundamental to growth. Learning is interactive and dialogic (Kashe, 2016).

Dr. Peter Fule and Dr. Jon Martin, Diné Institute instructors, have iterated the importance of agencies working together to create a single dialogue to ensure a progressive future that offers hope for all. My curriculum embraces the idea of students being offered a cooperative learning environment that focuses on inquiry and working with others to incorporate the ideology promoted in the Diné Institute. It encourages students to think critically outside of the traditional science standards that are generally taught within the school system. It embraces the Kinlani Dorm's philosophy, as well as FHS' mission statement and vision to prepare students for post-secondary life, and teaches the students the importance of collegial endeavors and collaborative success.

Content Objectives

When I teach, I strive to help the students achieve *equilibrarse - hovahoni* - balance. In my opinion, the biggest challenge for anyone who is learning to walk in two worlds is achieving balance between the two. The western world frequently utilizes a mainstream approach that is expected to be accepted by everyone without question. It is a “this is how it is done” mentality. However, not everyone flourishes in this type of learning environment. I do my best to embrace a multicultural approach that allows every student to have a voice and to meet them where they are upon entry into my classroom. I do not believe in leaving students behind. Yet, it seems to be a common and accepted practice that if a student is unable to perform to the expected level they get left behind. To quote my peer, Greg Lees, “We, as part of an educational institution, must stop failing students up” (2022). This statement makes it clear we should not continue to move students forward when they did not pass the classes necessary to move to the next level. It benefits no one when we move a student forward who did not pass Algebra into Geometry. This leads to a lack of confidence and a feeling of inadequacy for our students. We need to change so that everyone may participate and become a contributing member of society. In an effort to help my students embrace this ideology, I encourage and applaud their efforts and willingness to help each other without my prompting. Additionally, I promote inclusion by speaking and modeling the importance of collaboration and cooperation. There is no room in my classroom for making others feel inferior. We move forward as a class and celebrate every person’s accomplishment.

Our students should not be expected to leave their strengths at the door. We need to help them build those strengths within the system we have in place. Our students should not be expected to begin the race upon arrival at the starting line when everyone else has had a three minute head start. Embracing multiculturalism should encompass teaching students how to walk in two worlds: the world they have been raised in and the world at large. Students should leave our classrooms with the confidence and the skills necessary to find success in every next step in their lives.

Keeping in the forefront the life skills that students need, my curriculum includes strong reading and writing components that force students to integrate the language of science into their everyday schema and conversation. Writing is an essential skill in everyday life. My students struggle to become proficient in all four types of writing: expository, descriptive, persuasive and narratives. We will work on journaling, storytelling, anecdotes, article reviews, and everyday academic writing skills. In this class, my students will be exposed to multicultural ideals which rely heavily on their own prior knowledge and their knowledge of water, climate and the world that exists underwater in our oceans. Our oceans hold 96.5% of the water on our planet and understanding the ocean and its relationship to sustainability for life on this planet is critical. Here is the overarching theme with subtopics of the unit:

Physical Earth: Building the water planet	Plate Tectonics and Ocean Floor; Marine Sediments and Resources; Coastal Ecosystems
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I believe there is power in not only knowing where you come from, but understanding where others have come from. It broadens our ability to learn different perspectives and engage in meaningful dialogue. The first activity in my curriculum unit opens the door to begin such dialogue among my students.

Topic	Related Activity
Heritage Exploration Related to The Ocean*	Heritage Story Presentation
Pre-Assessment: Quick Question (empowerment - confidence)	What is a volcano? Do we have volcanoes here in Flagstaff, Arizona?
Volcanoes*	Review Locate Local Volcanoes Research Local Volcanoes Video: Volcano Emergency Plan
Pre-Assessment: Quick Question	What is plate tectonics?
Plate Tectonics	General Review Oreo Demonstration Puzzle Activity
Pre-Assessment: Quick Question	How are volcanoes related to oceanography?
Ocean Floor Spreading and Subduction Zone	Create models of sea floor spreading and subduction zones
Human Impact - Unit Assessment*	Write a story or share a story that encompasses what you have learned.

*Titles with an asterisk next to them will be highlighted below.

Teaching Strategies and Classroom Activities

My unit begins with students exploring their own heritage to create a relationship between what they have learned through ceremony and storytelling and what they want to learn about water and the ocean environment. This is considered the planning phase of the SOARR model. It gives students the agency to bridge their prior knowledge and their new learning. In using this philosophy, students are able to be curious, engaged learners who are able to make informed

decisions (practice responsibility) because they have become empowered by what they want to learn and what they have learned.

I will read a short passage about a mermaid and share the origins of the story with the class. I chose mermaids because my students are unlikely to choose a story with a Greek background to share. I did not choose a story from my own heritage because several students share the same heritage as mine. I want my class to be able to have a variety of stories to choose from and I do not want to inadvertently take a story away from their selection. Students will reflect upon their own heritage, or if they are unsure of their own heritage, they will be free to explore a heritage of interest. Students will form groups of four or five and investigate what stories they can find that are related to both the ocean and their own heritage. The small group will remain together until the end of the unit to encourage familiarity with peers and build unity within the class. Students will practice building relationships and communicating within their small community, both components of SOARR.

Once the team determines what heritage they would like to explore, each student will find a story and share it with their small group. The team will determine what story they want to share with the class. The following sheets will be utilized by the students to help them stay organized.

Heritage Stories Related to the Ocean Roles

The following positions must be assigned to someone within the group:

Researcher: this person is responsible for researching any information the team needs for their presentation _____

Scribe: This person is responsible for writing responses to the questionnaire - including a short speech _____

Reader: This person will read the short story to the class _____

Presenter: This person will share a brief summary of the materials and their meaning with the class _____

Illustrator: This person will be responsible for art work related to group projects _____

Students will answer the following questions and use them as a guide to create a short introduction to the story reading. Students will follow the reading by explaining its relation to both the ocean and their heritage. In this section, students will practice working on both implementation and evaluation of the SOARR model. I will encourage students to practice their presentation skills with each other in their small group (implementation) and determine if what

they are going to present makes sense (evaluation). Students will be encouraged to utilize multiple modalities in their presentation to accommodate the needs of special learners within the class. For example, they will be reading aloud but they must alternatively figure out a way to make sure students who are hearing impaired are able to receive the information being presented as well.

Who are the characters? What is the setting? Briefly explain what happens.

Who is the intended audience? What does the myth/legend tell the audience?

What is the purpose of this myth/legend for the people it was created by?

Is the myth or legend true or not? Discuss.

Discuss how this myth has been passed down through the generations.

One presentation each day of the week will occur at the beginning of the class to keep the students engaged in this work until the end of the unit where students will come full circle.

I like consistency within my classroom structure. I believe it helps establish routines and scaffolding for students. This encourages them to become comfortable and work with confidence. Part of my routine for any unit is to pre-assess my learners' knowledge on new material before going in-depth about a given topic. I break my pre-test down into small chunks and give them over the course of a few days. This allows me to gather a fairly accurate picture of my students abilities without overwhelming them. My end goal is to ensure students know the basic information related to this geographical structure. For the purposes of this section of the unit. Student will answer the following quick questions:

- 1) What is a volcano?
- 2) Do we have volcanoes in Flagstaff, Arizona?
- 3) What is plate tectonics?
- 4) How are volcanoes related to oceanography?

I support my students' learning by ensuring that I pre-teach background knowledge. I try hard not to assume my students already know the content because they are in high school and the standards should have already been met. My own personal experience as a city dweller from Michigan has helped shape my teaching approach to ensure I do not make assumptions about background knowledge as I have found myself at times misinterpreting information as it relates to smaller rural communities and the Southwest. Instead, I approach my lessons as if the information I am providing to students is new to them. How in-depth I go is largely based upon the feedback I get from the pre-assessment quick question responses.

I will introduce the topic of volcanoes by discussing the importance of the San Francisco Peaks to local tribes. The Navajo Nation views the Peaks as the sacred mountain of the west, *Doko'oosliid*, shining on top. It is seen as one of four sacred mountains with many areas on the mountain believed to be sacred. The narrative they understand is that the mountain is female and a provider. She is constantly taking in water and giving back to the people via plant life and animal life. The Peaks are considered a home for the Navajo deities: Change Woman, First Woman, and Puritans (Marks, 2022).

The Hopi Nation views the peaks as *Nuvatukaovi*, “The Place of Snow on the Very top”. The House of Clouds is seen as a home to the ancestral kachina spirits for half the year. They believe that by honoring the kachinas, the kachinas will provide rain for the corn plants. This reciprocity between humans and the spirit world are central to Hopi religious practices.

The Havasupai Nation refers to the Peaks as *Hvehasahpatch* (Big Rock Mountain). It is the major rock formation in their ceremonial history. It is connected to the first springs and first woman. Prayers are considered to be a conduit to spirit. There are many other tribes who view the Peaks as sacred because of its relationship with water, plants, and the sky (Crossing Roads, 2022).

The next part of my curriculum is a review about volcanoes. The review will be shared in a slide show that will cover a basic definition of volcanoes, the formation of volcanoes, what happens within a volcano, the different states of volcanic activity, and the different types of volcanoes. Once the class has had an overview of the basics, we will look at local volcanoes. Students will identify volcanoes located in Northern Arizona by latitude and longitude allowing them to engage in the use of prior knowledge from the beginning of the year. Working in their small groups they will need to pinpoint these locations on a map. Once they have identified and located the volcanoes, they will research what kind of volcanoes they located, if the local volcano is active, and how the volcanic activity has affected the geographical area. This activity will be followed by a short video from NAZ today about the Flagstaff Volcano Emergency Plan.

Local Volcano Research

Name	Latitude	Longitude	Type	Local Impact

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The class will now focus on oceanography. This lesson will begin with another quick question (What is plate tectonics?) to assess student knowledge of the topic. Based upon feedback, I will prepare a lecture related to background information about plate tectonics. I will conduct an Oreo demonstration of plate tectonics following the review. Students will engage in puzzle activities related to the different types of plate boundaries: convergent, divergent, and transform fault boundaries. This lesson will be wrapped up with a short quiz to ensure the students comprehended the information.

Students will answer the next quick question, how are volcanoes related to oceanography? Following the quick question assessment, students will watch a video related to seafloor spreading and subduction zones. Upon completion of the video, students will participate in an activity requiring them to create a model of seafloor spreading and subduction zones. They will be reminded of the puzzle activity from earlier in the unit to review how plate tectonics plays a role in the ocean.

After completing their models, I will share an article that discusses the challenge of science versus customs and traditions. The class will engage in a guided conversation about the article and complete a current event form. The current event form focuses on disciplinary literacy. The material being read has a focus on science and therefore exposes the students to scientific vocabulary and everyday applications for science. It provides students with the opportunity to practice using graphics (diagrams, graphs, data charts, photographs, etc.) they will be expected to analyze and respond to questions on standardized tests. The current event form also provides me with an opportunity to teach students how to ‘attack’ reading in scientific literature for understanding and comprehension. By ‘attack’ I mean I take time to break down reading so students are looking at the source, context, reviewing for mathematical errors, and errors in logic and wording. I want the students to think like scientists when they are reading materials related to science (Hougen, 2015).

I attempt to create lessons that allow students to make connections between what they already know and what the standards require them to know (Hall, et al., 2012). I also emphasize the importance of starting with what you know and continually adding knowledge so students can move forward confidently and not be overwhelmed by new information. The end of unit activity will require students to draw upon their background knowledge and expertise to write about how their heritage stories connect their background to the broader subject of the world’s oceans, volcanoes, and human impact in the world.

The students wrap up by creating and presenting a story related to volcanoes. These stories will be presented similarly to the stories presented at the beginning of the unit. The difference is students will be expected to create stories that connect what they learned in the unit representing both local volcanic activity and oceanic volcanic activity. They will be expected to write and illustrate their own stories to be presented to the class. Part of the presentation will require students to use the native language related to their research in their presentations.

Student Assessment with Accommodation Rational

This year FHS became fully inclusive in science and history. This means these classes have a wide range of learners with varying degrees of abilities. A class might consist of 35 to 40 students who have physical impairments, learning disabilities, emotional or behavior disorders, autism, speech or language impairment, traumatic brain injury, or a combination of the previously listed disabilities. In addition, classes may also have English language learners assigned. (An English Language Learner according to the Arizona Department of Education is defined as a K-12 PHLOTE student who does not obtain a composite proficiency level “proficient” score on the AZELLA regardless of their tenure as English Language Learners (ADE, 2022). In other words, students whose first language is not English.)

It is important to read Individualized Education Plans (IEP), 504 plans, and Individual Learner Language Plans (ILLP). These documents act as a guide to assist teachers with making adjustments for learners. They are a great way to get to know your students. Educators who are responsible for writing these documents are also great resources.

Accommodations or modifications are addressed in my classroom as seamlessly as possible. Students in high school do not like to be singled out because they are different. I attempt to embed accommodations and modifications for all of the students so no one is singled out. For example, because we have 35 to 40 students in classes, test days can become challenging. I have made arrangements to move 7 to 10 students each class period to test elsewhere. This allows everyone more space to work. This means I always have a group of students leaving to test elsewhere. No student is singled out and sent to an alternative class to test.

On the very first day of school, I use myself as an example when speaking about impairments and what others can do to assist me with my hearing impairment. This normalizes my disability and it encourages others to work cooperatively. Oftentimes students are embarrassed or ashamed of their disability. Students without disabilities frequently do not know how to approach their peers with disabilities. My openness allows and encourages students to be brave and to understand that acceptance for everyone is expected.

One of the most frequently requested accommodations is extra time. When I create a timeline for a unit, I always build in extra days for everyone. Projects are broken apart into sections with each section having a due date. Parents, students, and case managers are informed well in advance of important dates to assist students with completing work in a timely manner. I schedule time to be available outside of class time for students to make appointments with me if they need additional help.

Another accommodation that is heavily requested is teaching organizational skills. This skill can be taught to students in any grade level. It is one of the best things a teacher can do for a student. It builds confidence in students and assists them with learning a skill that they will use throughout their lives. Students in my class are taught to organize a journal that includes: timelines, note taking, vocabulary lists, assignments, drawings, tables, and graphs.

For the purposes of this unit, students will be given a timeline in advance. My visually impaired student will have her work enlarged. Certain sections of materials will be read aloud to assist my students with reading difficulty and discussed to ensure they comprehend the information. I will check in frequently with the groups to ensure everyone is participating and has what they need to complete the given assignments.

We rarely use grade modification in our classes. However, there is an ongoing conversation about the difference between what qualifies as an accommodation versus a modification. If assignments and assessments are to greatly accommodate, then an argument can be made that the class is being modified. This leads to a debate about whether or not students should be awarded a letter grade for the class. At present most educators at FHS agree that if students are able to meet the standards without significant accommodations and no modifications then a letter grade should be awarded to the student. If standards are not being met, the student may have to receive a pass/fail grade if they are in special education.

Student achievement is frequently based upon meeting the standards because standardized testing is based upon standards. The data derived from testing is used as a measurement of school letter grade. School letter grade often impacts student enrollment numbers. Student enrollment numbers determine the amount of funding schools are awarded. Nonetheless, standards are what we use to measure student achievement. Multiple standards were addressed in this unit: Dinéstandards, Next Generation Science Standards, Arizona State Standards, ACT standards, and Common IEP standards. I attempt to meet as many standards as possible and often pull from other subjects, such as math and English.

Math in particular is an important standard to focus upon because it often partners with science. Students need to hear consistent use of mathematical terminology and understand how the language is used similarly in both subjects. FHS uses the ACT suite for standardized testing. A quick review of the material shows that the test primarily focuses upon math standards. Students need to be able to read, analyze, and interpret tables and graphs to do well.

Student preparation for standardized testing is critical because it is often a determining factor in what colleges, scholarships, and grants students may be eligible for their Senior year. Student assessment begins on the first day of school in my classroom. Students engage in activities on the first day of school which allow me to assess their prior knowledge. This information is used to assist me in designing targeted instruction for my students. Within the first few weeks of school, students will engage in projects that will require them to participate in gallery walks and answer short quizzes with open ended questions.

Throughout the school year, students self-assess to improve their own work. We do some peer assessment but this comes late in the year after students have gained some confidence in their own work. Informal assessments often include classroom observation, polls, and grading rubrics. In addition to formal assessments, I use classroom observations and student portfolios to track student progress.

Many different types of assessments are employed in this unit. Students are given pre-assessments in the form of quick questions. Informal conversations and observations occur over the course of the unit. Students will be assessed with a rubric for their oral presentation and their written presentations. Peer assessments will be used for the models and classroom polling will be utilized to determine student perceptions of the unit.

What I have noticed this year is that students are struggling with skills they previously would have obtained by the time they entered high school. Students are most successful when lessons begin and end in the same class period. This means they are given a pretest upon arrival, content is taught immediately following the test, and a post test is given before departure. Or assessments must be less arduous and lengthy because students are unable to focus and apply critical thinking skills. I am teaching students to use their notes for tests and measuring content mastery through project based learning because students lack test taking skills.

In summary, the Diné institute has opened my eyes to the need for educators to re-evaluate their teaching pedagogy and methodology. We need to make adjustments to meet the needs of post COVID students and families. The expectations that were held previously are no longer viable. Adjustments that used to be made for individual students now need to be made for entire classes because students lost skills that were considered standard practice prior to COVID. Now educators need to consider first and foremost the relevancy and value of their content in relationship to their students' needs.

Alignment with Standards: Diné, Science, ACT, and IEP considerations

Diné Standards

I will develop an understanding of the Diné way of life.

Concept 3 I will implement and recognize the Diné lifestyle.

PO2 I will research the cultural stories relevant to land and water.

Concept 4 I will apply and practice the Diné way of life with confidence.

PO2 I will appreciate the significance of water.

I will develop and apply critical thinking to establish relationships with the environment.

Concept 3 I will have self-respect.

PO2 I will express my compassion and acknowledgement to all.

Concept 4 I will express gratitude in everything.

PO1 I will show appreciation for my Diné language and customary practices.

PO2 I will practice my language and culture by using it to plan and teach others.

Next Generation Science Standards

HS- ESS3-6 Illustrate the relationships among Earth systems and how those relationships are being modified due to human activity.

Technological advances have influenced the progress of science and science has influenced advances in technology

Alignment with Standards

AZ State Standards

Science

Plus HS+E.E1U1.6

Obtain, evaluate, and communicate information of the theory of plate tectonics to explain the differences in age, structure, and composition of Earth's crust.

Plus HS+E.E1U1.8

Develop and use models to illustrate how Earth's internal and surface processes operate over time to form, modify, and recycle continental and ocean floor features.

Writing

WHST.9-12.5

Develop and strengthen writing as needed by planning, revising, editing, or trying a new approach, focusing on addressing what is most significant for specific purpose and audience. (HS-LS1-6), (HS-LS2-3)

CCSS.ELA-LITERACY.RST.4

Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context.

Etymology, multisyllabic word reading, and morphology CCSS

Determine or clarify the meaning of unknown and multiple-meaning words and phrases.

ACT Standards

Science

IOD 302.Understand basic scientific terminology

SIN 701. Understand precision and accuracy issues

EMI 403. Determine which models imply certain information

Writing

I&A 201. Understanding the task and writing with purpose

ORG 201. Grouping and connecting ideas

ORG 202. Employing an organizational strategy

Common IEP Standards

09.WHST.10 Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline specific tasks, purposes, and audiences

9.RI.1 Cite strong and thorough textual evidence to support analysis of what the text says explicitly as well as inferences drawn from the text.

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