Toxic Waste and Indigenous Environmental Justice

From Sacred to Recreational: Balancing Traditional Indigenous Site Management with the General Public

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Diné Institute for Native-Serving Educators (DINÉ)

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Context

Who I Am

I am an elementary school teacher in Flagstaff, Arizona. I have taught for going on six years and will be teaching this curriculum unit to a self-contained fourth grade/fifth grade combination class. This means that instead of the students rotating to different teachers for specific subject area instruction, they spend the entire day with me as I teach them all the subjects. I want to acknowledge here that I am not Diné, so much of the cultural information I will share in this unit and with my students comes from second-hand sources. I have spent all of my teaching years in Flagstaff where I serve many Diné and Hopi students, so I have had the chance to learn from my students, their families, our Native American counselors, and my own research. Many of my sources of Diné knowledge are also the incredible fellows I have met in the DINÉ Institute, and I am extremely grateful to them for sharing their knowledge and stories with me. While I have learned much from these wonderful folks, I know that my knowledge is incomplete, and I am always open to learning anything that is shared with me. I am a multi-racial person of color, so I do identify with many of the same struggles that Indigenous people experience. I have experienced struggles with racial biases and cultural misunderstandings, both as a student and as an adult in my personal and professional life. This has given me motivation to be as open as possible to learning more about cultures that I do not belong to. It has also encouraged me to seek leadership positions where I can help to celebrate student diversity. I do this most recently as the chair for our school's Justice, Equity, Diversity, and Inclusion (JEDI) Committee.

My School

As mentioned above, I teach in Flagstaff, Arizona, at Kinsey Inquiry and Discovery School. We serve preschool through fifth grade students. Kinsey is a Title I Magnet school where we serve traditionally under-resourced students with a focus on project- and place-based learning. This means that we frequently take our students on excursions around Flagstaff and more generally the Northern Arizona region so that we can expand students' knowledge of our place and what makes it so special. The official mission of Kinsey is to "(provide) learning experiences inspired by the environment, cultures and community of Northern Arizona," and the core values are listed as integrity, collaboration, engagement and wonder (Flagstaff Unified School District, 2022). We use these core values to guide our instruction, plan learning excursions, encourage positive behaviors in the classroom, and to vertically align learning goals throughout the grade levels. Students also have a recent code of conduct that came with our new school mascot. In the last few years, the school has changed from the Kinsey Cougars to the Kinsey Hotshots. This new mascot was chosen because of the value we place in being stewards of the land. Therefore, our code of conduct uses the values of Friendship, Integrity, Respect, and Empathy (F.I.R.E.) to encourage students to move about the school and community with pride and care.

Around 1957, the Brannen area of Flagstaff around Pine Knoll Drive began to expand in population. This included constructing some low-cost housing, and it was determined that there should be a new school built to serve those children. The school was named for Lura Kinsey, a local woman who had graduated from Northern Arizona University (then called Northern

Arizona Normal School), and then worked for many years as a teacher and then a principal at Emerson School (Killip, 1976). We continue to serve students with higher socioeconomic need, and to pursue a commitment to being a community school.

According to data from the Arizona Department of Education, about fifty percent of our students are Indigenous (mostly Diné and Hopi), twenty-three percent are Hispanic, twenty percent are white, four percent are multi-racial, and about two percent are listed as redacted. A redaction indicates that the subgroup has ten or fewer students and they redact in order to protect the privacy and identity of those students (Arizona Department of Education, 2022). As these numbers show, we serve an incredibly diverse student population. However diverse our students are, our staff does not reflect that same diversity. Most teachers and staff members of our school are white, and therefore do not have the same lived cultural background as our students. Because of this, we have made a concerted effort to continue learning more about our community and the students we serve. Our Justice, Equity, Diversity, and Inclusion (JEDI) committee runs monthly celebrations for the students and staff to participate in, where we learn about and celebrate different cultures represented in our school. This committee and their events were new to Kinsey in the 2021-2022 school year. They were so well-received by students, families, and staff, that we plan to expand these celebrations in the coming year.

My Students

Many of our students reside within a few miles of our school and walk to school from the surrounding neighborhood. Because of our status as a magnet school, students also have the option to come to us from all over the school district boundaries. Kinsey bus students in from as far as Mormon Lake (about thirty miles away), and some families drive in from places on or bordering the Navajo Nation like Winslow, Williams, and Cameron.

I teach a multi-age classroom with fourth- and fifth-grade students. I teach the four core subjects (Math, English Language Arts, Science and Social Studies) in my room, and the students learn from our specials teachers for classes like physical education, art, music, library, and social emotional learning. Because of this combination, students consistently rotate between small-group time with me in their grade-level groups, and independent work as I deliver grade-level instruction to the other groups. There will be a focus at one point on whether or not the fifth-grade students agree with the land and water use of one specific place, and they will then have the opportunity to decide if they would like to still attend an annual field trip to this place. However, all of the activities listed in this curriculum unit will cover both fourth and fifth grade standards and are accessible to fourth and fifth grade students.

Rationale

Historical Land Use Conflict

This unit is particularly pressing to my students because part of the unit addresses a field trip that occurs throughout our entire district. Each year, fifth grade students throughout Flagstaff Unified School District are invited to participate in a ski trip to Snowbowl resort, which sits on the sacred San Francisco Peaks. The San Francisco Peaks hold cultural significance for at least thirteen

different tribes around the Northern Arizona region. In Diné culture, these peaks are called Dook'o'oosłííd, and they are one of four sacred mountains that represent the boundaries of Diné land. The Havasupai Peoples see these peaks as the birthplace of their people (Benally, 2004). The most recent significant clash between Indigenous Peoples and the United States Department of Agriculture Forest Service (Forest Service) who manage public Forest Service lands, and Arizona Snowbowl (the privately-owned Forest Service concessionaire), occurred around the early 2000s, when the Snowbowl resort owners proposed expansion of the ski season by using reclaimed wastewater on the mountain. The Forest Service performed an Environmental Impact Study (EIS), and determined that, "The Forest Service recognizes that there will be an adverse effect on Native American religious beliefs; however, the Forest Service finds public use of the Snow Bowl area and the goods and services the public derives from the San Francisco Peaks area is a substantial and compelling reason for continuance and improvement of the development," (Benally, 2004). In plain terms, the economic value of the resort outweighed the cultural significance of the sacred peaks.

Many of my young students are unaware or uninformed about this conflict between cultural values and land use in this excursion, but it does not always get discussed with the same gravity from year to year. From what I could determine from conversations with some previous fifth-grade teachers, most students who do not want to attend the trip for any reason simply do not fill out the permission slip or they do not show up on that school day. Occasionally, families will reach out and express that their student will not be attending for cultural reasons, but it is my understanding that this is not typically a conversation that *all* students engage in. My intention with this unit is to pose the differing sides of the debate, and then to have students decide for themselves if they would like to attend this excursion. This is one example of the many different land use values we will examine in this unit.

The Value of Cultural Representation

I also chose to teach this unit because as I mentioned before, the diversity of the students at our school (and largely nationwide) is not matched by their teachers. In these childhood years when students are defining their own identities, they rarely see themselves reflected in their teachers. One Seattle teacher notes that, "Students of color rarely have an opportunity to have a teacher who looks like them. Identity formation is a process that takes many years; role models are crucial in the formation of identity," (Kloub, 2019). If many teachers in our school cannot serve as mirrors to our students' own identities, we need to work to create and utilize culturally-responsive curriculum that helps students feel seen in other ways. After the damaging and lasting effects of colonization in the United States and particularly in education, we need to go out of our way to encourage conversations about culture and who our students are and what they value.

When I was a student in the public school system, I often went to school with students and teachers who did not look like me. I think that many of my teachers were well meaning, but I experienced many instances of cultural and racial violence as a student, sometimes directly at the hands of my teachers. For example, in the fifth grade, I was in an honors level reading class. We were reading the book *Roll of Thunder, Hear My Cry* by Mildred D. Taylor, and the "n word" comes up frequently in that text. Personally, I felt that we did not need to consistently use the full word when having class discussions, and I was the only student of color, as well as the only

Black student in that class. When I voiced my opinion to my teacher that perhaps we did not need to use the full word every time we discussed, she dismissed my concerns and said that "it was in the story like that," so it was fine to continue using. I felt dismissed, discouraged, and offended that my teacher would not stop for a single moment and consider the racial violence she was allowing my peers to put on me. I was hurt that a trusted adult put the supposed academic freedom of my classmates ahead of my safety and comfort as a student of color in a largely white school system. I decided from that time on that if I became a teacher, I would never allow my students to feel misunderstood or actively hurt by me or their classmates. Since then, I have vowed to do the work to participate in deep learning about my students and where they come from. As a result, I find myself here at the Diné Institute for Native-Serving Educators. I seek to write this unit as a measure of comfort, safety, and validity for my students because I want their educational world to feel safer than the one in which I grew up.

Countering Educational Damage

I also write this unit in direct opposition to the harm that boarding schools have inflicted upon Indigenous children and their families. Indian boarding schools were first started in the late 1800s, with the "belief that the only way to educate Indigenous children to be part of settler society was to isolate them from their cultures, families, and communities. The boarding schools were modeled on treatment of Native prisoners held at Fort Marion, (2014)." Acclaimed author and historian Roxanne Dunbar-Ortiz, PhD, goes on to explain that this prisoner model used in Fort Marion was so successful in training the prisoners to be "useful" to settler society that students in the first boarding school were trained on skills beneficial to complete manual labor (2014). The first federal government-run boarding school was called the Carlisle Indian Industrial School and was used as a prototype for the boarding schools to follow (Carlisle Indian School Project, no date). Students were made to assimilate to settler ways, which included speaking English instead of their Native languages, cutting their hair short, dressing like settlers, and changing their names (Carlisle Indian School Project, no date). Some families sent their children willingly, in the hopes that their children would adapt to the new colonial landscape and survive, while other children were stolen from their families. They were not allowed to use their Native languages, and many of their cultural beliefs were lost to these schools (Carlisle Indian School Project, no date). The harm of this loss has since been studied, and Native American Boarding School Healing Commission CEO Christine Diindiisi McCleave states that "studies like ACES now confirm that childhood trauma leads to physical, emotional, and mental health disparities in adults. Native communities are in need of healing from the damage caused by this federal policy," (2022).

Knowing that our Indigenous students may carry this generational trauma with them, either consciously or unknowingly, it is my job to counter the way the schools have treated them in the past. My duty is to consistently express that I recognize and value all that my students bring to the table. I will do this through a few different strategies, the first of which is by making a commitment to clear communication and collaboration with families throughout the year. I know that this next year I will have some students and their families in my class who are very open about sharing seasonal stories and general cultural knowledge in the classroom. I want to have an open-door policy, and to consistently invite them in to support the learning occurring in our classroom. The second strategy that I will use to make clear my commitment will be to allow

students the time to share ideas together. As I have learned through my participation in these DINÉ seminars, storytelling is circular and does not always progress in a linear fashion. In western culture, we are taught to hurry up and get to the point. However, I will make a commitment to hearing out the ideas and stories that my students choose to share with me. I understand that each shared moment is a sign that I have earned the trust of my students, and I want to really take the time to appreciate those relationships.

Content Objectives

Driving Question

In this unit, we are led by a driving question: What is the value of outdoor spaces? We have used this question in the past with fifth grade students to help prepare them for a kayaking trip on the Verde River that we take at the end of the year. With this unit, I want to use this driving question to connect the students to learning about many places within the four corners region. We can then use the question later in the year to think about the Verde River, and students will have the entire background of this unit to prepare them for that end-of-year work. As a place-based school we believe that repeated exposure to outdoor spaces will help students cultivate a love for our spaces, as well as a sense of stewardship. Therefore, this driving question should help them to frame their thinking throughout the school year.

Historically, children have been excluded from asking questions about the value of outdoor spaces. In fact, they have been largely excluded from the environmentalism movement as a whole. In his book *The Last Child in the Woods* (2005), Richard Louv makes this observation: "That environmentalists need the goodwill of children would seem self-evident – but more often than not, children are viewed as props or extraneous to the serious adult work of saving the world." For this reason, my unit seeks to involve students in direct, authentic action about a place of their choosing. We will spend time going over each place discussed below as a whole class, then students will later choose a specific place they would like to study and report on more deeply.

Environmentalism, Environmental Justice, and Indigenous Environmental Justice

Typically, people think of the three above terms as one and the same, or at least interchangeable. While these terms are related, they represent three distinct approaches to stewardship and the value of natural spaces. Environmentalism can be examined through four distinct pathways, as discussed by Dorceta Taylor (2002). The first of these pathways is "a wilderness, wildlife, and recreation approach…chosen primarily by middle class, white males, although it attracted middle class, white female participants as the 20th century approached." This pathway was largely unavailable to People of Color and did not consider any historical or Indigenous use of lands. It was heavily influenced by colonialism. The second pathway in environmentalism "took on an urban environmental agenda focused on parks, open spaces, public health, sanitation, worker rights, pollution abatement, and housing reform." Taylor goes on to explain that this pathway was largely only inclusive of white, middle-class people who lived in cities, and again excluded People of Color. The third pathway focused on worker rights and safety, as well as recreation in outdoor spaces and intentionally excluded People of Color. When setting out to build parks,

pools, and green spaces, People of Color were barred from entry to or enjoyment of these spaces. The fourth pathway described by Taylor is finally inclusive of and spearheaded by People of Color, "address[ing] social justice concerns such as self-determination, sovereignty, human rights, social inequality, loss of land base, limited access to natural resources, and disproportionate impacts of environmental hazards and linked them with traditional working class environmental concerns such as worker rights and worker health and safety to develop an environmental justice agenda." This pathway aligned more closely to the ideals of Environmental Justice than Environmentalism and represented a departure from the traditional colonial methods of land use.

Environmental Justice is defined by the Environmental Protection Agency (EPA) as "the fair treatment and meaningful involvement of all people, regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental regulation and policies," (EPA 2019). This deliberate inclusion of marginalized and under-resourced peoples demonstrated that "Environmental Justice is a critique of the environmental movement," which was much needed in order to protect *the human beings* who value those spaces, not just the spaces themselves (Jarrat-Snider, 2022).

Indigenous Environmental Justice (IEJ) then moves to center the voices and needs of Indigenous peoples regarding the land and its resources. In their introduction to the book *Indigenous Environmental Justice,* Jarratt-Snider and Neilsen (2020) determine three factors that differentiate IEJ from environmental justice:

1. Native American tribes are governments, not ethnic minorities.
2. Connections to tribal homelands
3. The continuing effects of colonization

These factors help to clarify that while all IEJ issues are EJ issues, not all EJ issues pertain to IEJ.

Background Information on Sacred Spaces

With the understanding of an IEJ framework, we can move forward to the content that students and teachers will need to be successful when implementing this unit in their classrooms. In the following sections, we will discuss six different cases of IEJ, both successful and not (yet) successful for the Indigenous peoples they affect.

Wupatki National Monument

Wupatki National Monument is just about forty minutes outside of Flagstaff, and is viewed by many in the area as a historic educational site. It is accessible as you drive through and then past Sunset Crater National Monument, with the drive providing incredible views of the Painted Desert. Wupatki is within a desert climate and is made up of red rock structures including a ball pit, a small cemetery, and some multi-story dwellings. The signage at the monument informs you that the park was once home to the Pueblo people, and that it also "flourished as a meeting place of different cultures" where "trade networks expanded, bringing exotic items like turquoise, shell jewelry, copper bells, and parrots," (National Park Service, 2022). Though the history of the peoples who inhabited this area from around 13,000 years ago to the eruption of Sunset Crater

Volcano around the 11th century is for the most part thoughtfully documented, there is one more recent story that is missing from the dialogue.

After the Long Walk from Bosque Redondo or Fort Sumner, New Mexico, Navajo peoples were allowed back onto their land. As a result, Peshlakai Etsidi moved himself and his wives to the Wupatki area around 1868 to settle and start his life anew on his ancestral lands (American Southwest Virtual Museum, 2022). While the Diné were forcibly removed from their lands, white ranchers had begun to settle the land for themselves, and were reluctant to share when the Peshlakai family returned. As a result, Peshlakai Etsidi traveled to Washington, D.C. in 1902 to arrange an allotment agreement for the Navajo people and their grazing rights.

Wupatki National Monument was established in 1924, which still resulted in relative agreement with Peshlakai and the other Navajo families who had settled in the area. The Peshlakais now included son Clyde Peshlakai, and his daughter Stella Peshlakai. Because Stella was born just before the National Monument was established, she has been permitted to live on her homelands in her hogan. However, per the agreement with the Park Service, she is the last living heir who is allowed to live there. When Stella passes, the land will be allocated back to the National Park Service ownership. Stella advocates for her plight and the plight of others by saying "even though our elders have gone away, I still want to see the fulfillment of the return of the Navajo. The return of the people to this land," (Capachi, 2014).

Her family has continued to contest the letter of authorization that will terminate their future land rights, but now it is Congress that has the authority to amend this agreement and allow her family to reside on their land. There is currently a bill in the Arizona Legislature that proposes

> 1.That the Members of the Legislature ask the National Park Service to facilitate discussions and efforts to help the Peshlakai family and other families who have been displaced to resolve the severing of rights to ancestral lands in Wupatki National Monument.
> 2. That the Members of the Legislature support any congressional effort to help the members of the Peshlakai family retain their residence and grazing rights throughout the Wupatki National Monument. (Arizona Legislature, 2022)

This bill is currently marked as "held in committees," which does not give hope to her family or other families seeking to return to their lands.

Monument Valley Uranium Mining

Monument Valley is well known for its breathtaking rock formations, and for that incredible red-rock view seen in many old western movies. However, the lesser known mining legacy put the health of many Diné in terrible jeopardy from the opening of the first mine to today. In her book *Yellow Dirt*, Judy Pasternak takes a hard and detailed look into the deception by the United States government of the Navajo people.

In 1943, government surveyors first began appearing in the Monument Valley area of the Navajo Nation, searching for vanadium. This was in the midst of World War II, and the United States

had just joined the war effort two years earlier. Vanadium was known to be mixed with steel in order to create a harder, more durable armor for Navy ships, and was also known to be present under the soil of the Navajo Nation. What the Diné did not know at the time was that these surveyors had an ulterior motive to not only find vanadium, but the uranium that was typically found alongside it. During the 1930s, the Navajo tribal council had voted in strong opposition to any mining on the land, recalling the countless prior instances of exploitation of the Diné by colonial empires and later the United States government. However, when World War II emerged as not just a European but a global threat, the Navajo Council promised, "that the Navajo Indians stand ready…to aid and defend our government and institutions and pledge our loyalty." (Pasternak, 2010) This meant that in 1941, the council reversed its decision to ban mining, and allowed for government contracts to be drawn up in order to begin mining. It was later revealed that the mines were supposed to find not just vanadium but "yellow dirt" or łeetso in Navajo language.

Navajo men quickly signed up to work at these mining operations, with the hopes of consistent work and payments that could go to their families. While the danger of mining łeetso was known to the United States government entities because of the radiation, it was not communicated to the miners until they began to show signs of illness. Pasternak writes, "the cancer death rate among Navajos doubled from the early 1970s to the late 1990s…The symptoms became familiar. First, a lump on the neck. Then shortness of breath. Then, spitting up blood." (Pasternak, p. 136). People would get sick from the mining and direct radiation exposure while their families would also get sick from secondary exposure. One Diné Institute seminar colleague of mine recalled childhood memories of running up to hug her father coming home from the mines covered in a yellow powder. Her father would pass his clothing along to her mother to wash, which she would do by hand outside. Each day, her entire family was exposed to uranium and its radiation. Eventually her father passed away from exposure.

Exposure came not only from working in the mines, but the mine tailings that were left after mining was complete. According to Earth Works, "Tailings are the waste materials left after the target mineral is extracted from ore. They consist of:

- Crushed rock
- Water
- Trace quantities of metals such as copper, mercury, cadmium, zinc, etc.
- Additives used in processing, such as petroleum byproducts, sulfuric acid and cyanide." (Earthworks, 2022)

These tailings were left around the mines on the Navajo Nation, and were not properly contained. There were not any safety precautions taken with these tailings, and this resulted in more exposure than before. Navajo children would play near closed mines, people would use the timber from the mine openings to build animal corrals, and people would use the dirt from the tailings to pack bricks in order to build homes. Entire communities were exposed to more radiation without their knowledge, oftentimes causing a disease deemed "Navajo neuropathy." This disease left children born with birth defects such as "liver damage, dimmed vision, and most dramatically, fingers and toes that gradually fused and stiffened into hooks. They tended to die young. The average age of death was ten," (Pasternak, 2010).

Eventually, the Environmental Protection Agency (EPA) declared the abandoned mines a Superfund site, meaning that it would be designated for cleanup. Superfund is an informal term for the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, which taxes the oil and petro-chemical industries to create a super, never-ending fund for cleanup of contaminated sites (Environmental Protection Agency, 2022). CERCLA gives the EPA the funds and authority to clean up contaminated sites. On the EPA website, they acknowledge that "there are over 500 abandoned uranium mines on Navajo Nation," as well as "homes and water sources with elevated levels of radiation," but that they are beginning to assess and clean up 230 of the 523 abandoned mines. There are ongoing plans to do more, but they cannot come soon enough.

In 1990, the US Congress passed the Radiation Exposure Compensation Act (RECA, pronounced "ree-cah"). According to the United States Department of Justice, this act was created in order "to serve as an expeditious, low-cost alternative to litigation" (2022). However, while that plan sounded like just compensation in theory, the execution was extremely poor, and many families find themselves unable to claim their compensation. One such example was that families were asked to prove documentation that their family members had worked in the mines. Many of the mining companies that existed back at the start of the mining boom had since gone out of business, and the paperwork no longer existed to help prove anyone's employment. The RECA process also required that families provide birth and death certificates and documentation of the illness for identification of harmed family members. Because of the remote nature of the reservation, many people were born and possibly died at home without ever visiting a hospital and receiving the corresponding documentation. While this act was conceived with the best intentions, the overall result was that many people who were eligible for claims were not able to receive their compensation over bureaucratic issues.

San Francisco Peaks

The San Francisco Peaks are so named in English after 17th century Spanish missionaries and their founder, St. Francis of Assisi (The Editors of Encyclopaedia Britannica, 2019). They are considered sacred to at least thirteen local tribes, including the Navajo, the Hopi, and the Havasupai, to name a few.

The ski resort Arizona Snowbowl was established in 1938 in Hart Prairie, with the establishment of the first Flagstaff High School Ski Team in 1940 (Arizona Snowbowl, 2018). As the years went on, Snowbowl continued to build up the resort, despite the base lodge burning down in 1952 (Arizona Daily Sun, 2007). They extended roads, and then built the Agassiz Lodge in 1954. In the 1970s, Summit Properties (now the owners of the area) proposed to purchase and develop a 350-acre parcel of land in the Hart Prairie area of the San Francisco Peaks. This was prevented by a land-use plan put in place by the United States Forest Service (USFS), and so they were asked to amend that decision and allow Summit Properties to follow through with this plan.

In opposition of this proposal, citizens of Flagstaff including many Indigenous leaders got together to put a stop to this development. Thus the "Save the Peaks" movement was born. A committee called the Plateau Sciences Society, headed by Patrick Graham, Rosemary Benally, and Peggy Lee, came together to author a document entitled "San Francisco Peak: a plea to

protect" as one way to stop this development. In this document, they collected opinions from Navajo and Hopi people on the cultural importance of the peaks, as well as their concerns about the future of this sacred space. Through their research, they concluded that many traditional folks did not realize that the peaks did not already belong wholly to the Indigenous peoples. Thus, they did not understand that the USFS should designate the land as protected on behalf of the Navajo and Hopi people, and instead "objected to the concept of Wilderness classification because they thought that this would mean 'giving' their holy mountain to the government." (Graham, Benally, & Lee, 1972) They also noted a general objection to development of the land, and sadly included that some "may just accept [the development] as another abuse that they lack the power to stop but that hopefully, will be made right in the end when all things have run their cycle." This indicated a strong sense that while the USFS may not come to the just conclusion to designate this parcel as a protected space, ultimately the decision would be rectified over time.

In one portion of the report, Peter MacDonald, former Chairman of the Navajo Tribal Council, takes care to discuss the cultural significance of Dook'o'oosłííd, detailing that "it (and the other three Sacred Mountains as well) is the reservoir for all the plant and animal life of the Navajo world." He goes on to discuss the deities that reside in this mountain, and the sacred shrines to those deities that are located on the east, south, west, and north slopes of the mountain. This report concludes in an official resolution from the Plateau Sciences Society, wherein they, "[request] that that sacred significance of this mountain to the Navajo and Hopi peoples be given all of the consideration due it and that every effort be taken to preserve and protect its integrity in the future (1972)."

After the land was purchased by Northland Recreation in 1977, the USFS completed an Environmental Impact Statement, and made the decision to approve the master plan in 1979. The USFS was sued in federal court in 1981, but the USFS decision was upheld by the U.S. District court, the U.S. Court of Appeals, and the U.S. Supreme Court. While this seemed to be enough of a blow to the Indigenous tribes and their beliefs, Snowbowl further added insult to injury by requesting and getting approval in March 2002 from the Flagstaff City Council to purchase reclaimed wastewater to use in the creation of artificial snow. This snowmaking with reclaimed wastewater was then allowed by the Coconino National Forest in 2005, but many environmental groups and tribes opposed by suing. Despite litigation and the argument that these mountains are sacred and hold cultural and natural significance, Arizona Snowbowl has been allowed to use reclaimed wastewater to make artificial snow on the mountain since 2012 until the present (Arizona Journal of Environmental Law and Policy, no date).

Glen Canyon Dam and Lake Powell

The Glen Canyon Dam intercepts the Colorado River around southern Utah and into northern Arizona. Historically, the Colorado River flowed freely but irregularly through the upper Colorado River basin states (Colorado, New Mexico, Utah, and Wyoming) and into the lower Colorado River basin states (Arizona, California, and Nevada). The dam was proposed as part of something called the Colorado River Storage Project (CRSP), which sought to create "banks" of water in four main storage areas along the waterway. Construction began in 1956, approved by the U.S. Bureau of Reclamation, and the dam gates were shut to begin collecting water in January 1963. This dam flooded Glen Canyon and created Lake Powell. The dam then served as

a source of hydroelectric power for southwestern cities such as Phoenix, Arizona, Las Vegas, Nevada, and Los Angeles, California. This new lake also "flooded hundreds of acres of Navajo land and removed several hundred Diné from their ancestral homeland." (Dickey, 2011)

Interestingly (or insultingly) enough, the National Park Website for Glen Canyon Recreation Area has this to say of the peoples of this place, "Protohistoric period. 1500–1850 CE. This information for Glen Canyon is sparse with some evidence for Navajo, Paiute, and Hopi use of the area prior to the Spanish arrival in 1540." It goes on to say that in the "historic period,"

> "Several different prehistoric cultures and current Native American groups are represented in the culture history of Glen Canyon, and the recreation area represents a cultural interface zone where different groups were periodically coming into contact with one another over long periods of time. Today, many modern descendants of these groups still have important cultural ties to the area, and specific places in Glen Canyon possess enormous ongoing cultural value to these groups." (National Park Service, 2019)

The page and the entire website overall do very little to acknowledge the harm done by damming a cultural heritage site. They do not mention that this area has been considered Dinétah for centuries, instead claiming that "Glen Canyon National Recreation Area preserves a record of more than 10,000 years of human presence, adaptation and exploration," remaining "significant for many descendant communities," who are unnamed on this page and who did not consent to this flooding and loss of their land.

While this at first seemed incredible to me that there is no acknowledgement of this damage done, Dr. Sonia L. Dickey uses her dissertation to claim that this land was in fact given away by tribal authorities in pursuit of economic success. She states in her telling of the story of Glen Canyon that, "Through its efforts to secure irrigation projects, beneficial land deals, valuable waterfront property, and advantageous mineral leases, the [Navajo Tribal] council actively participated in the environmental degradation of Dinétah (the original Navajo homeland) … result[ing] in a form of internal colonialism through resource development that mirrored the efforts of external interests to turn habitat into money, all at the expense of the tribal council's constituents." (2011)

NASA Earth Observatory photographs and studies reveal that the water level in Lake Powell is currently filled to just 26 percent of capacity, its lowest point since 1967 (2022). In side-by-side satellite photographs (see Figure 5 in the appendix), there is a drastic difference in the level shown on August 16, 2017 (the highest the water has been in the last decade), and the level shown in August 2022. To lose Dinétah is upsetting, but to then see how the lake is being depleted to such extremes adds salt to the wound.

Grand Canyon

The Grand Canyon is famously recognized as one of the seven wonders of the world. It is also viewed by many Indigenous peoples as a place of emergence, and is central to many creation stories. One author notes that "since [John Wesley] Powell's initial voyage [in 1869], more than 4,000 archaeological sites, documenting 10,000 years of human history, have been recorded in

the Grand Canyon by numerous archaeologists." (Mink, 2015) Knowing that Grand Canyon holds a rich history and significance for the tribes within the region, the designation of this place as a national monument in 1908 and then as a national park in 1919 has been complicated.

The Havasupai are the tribe most affiliated with the area, most likely because they are the only Indigenous tribe that still currently lives below the rim of Grand Canyon. According to Ophelia Watahomigie-Corliss, a Havasupai councilwoman, Supai village where they currently reside was traditionally their summer home, and they lived in other spaces across the South Rim during the wintertime. (Needs date) Today, that South Rim area is designated National Park land, after the Grand Canyon Railway was built and frequently traveled leading up to the park being federally established in 1919. In the original agreement for the reservation established in 1880, the Supai village served as a reservation but did not include the Havasupai Falls (Hobson, 2019). The addition of the waterfalls was later negotiated in 1975. The falls now serve as a tourist destination for avid hikers but remain in control of the Supai. This has allowed them to govern this space in a way that prioritizes their people first, such as closing the campground during the pandemic, outlawing alcohol consumption, and restricting volume of campers and hikers on their own terms (Havasupai Tribe, 2020).

In light of the challenging relationship with the Indigenous Peoples of the region, Grand Canyon National Park has made a concerted effort to repair the harm done in the past. The Centennial celebration of the park's designation in 2019 brought to light many of the issues that persist and shed light on some efforts to amplify the voices of the canyon's original caretakers. The Desert View Inter-Tribal Heritage Area is perhaps the most visible example of this effort to reclaim the Indigenous voices of the canyon. Through collaboration with the National Park Service, the Grand Canyon Conservancy, and an Inter-tribal working group made up of leadership between the eleven traditionally associated Indigenous tribes in the area, the goal of this space, "is to transform the Desert View area into a thriving space that celebrates the tribal heritages of Grand Canyon," (Grand Canyon Conservancy, 2022). They have worked to restore the Desert View Watchtower, transforming it from a simple gift shop, to an educational space covered in murals and frequented by tribal members who are prepared to share their history with visitors. The work on the Watchtower was completed in 2019.

Most recently, there are plans to expand the visibility of Indigenous Peoples at this Inter-Tribal Heritage Area. According to the Grand Canyon Conservancy, the intention of this site is to begin to "address the historic inequities faced by Native Americans through new pathways for cultural and economic opportunities to determine a new thriving future," (2022). With a ground-breaking ceremony in May of 2022, this plan includes the development of a Tribal Welcome Center, and the expansion of a Cultural Demonstration Series where they provide spaces for different "artisans from the 11 traditionally associated tribes" to display their works with the visitors. The ability for Indigenous tribes from around the area to be clearly valued and celebrated by the National Park and its visitors is the first project of its kind (Grand Canyon Conservancy, 2022). This model of partnership and collaboration is not yet complete but provides an excellent blueprint for other National Parks in terms of the ways to begin to address historical injustices, and a way to loudly proclaim that Indigenous peoples are the past, the present, and the future of these protected lands.

Teaching Strategies

Classroom Culture

The first and what I believe to be the most important strategy is to build a collaborative classroom culture. I find that the more time I invest into the relationships in our classroom, the faster and more confidently we are able to move forward in learning and exploring new topics together. Since this unit is largely project-based, I typically look to the organization PBL Works for ideas on how to build a stronger project-based learning environment in my class. Suzie Boss from PBL Works says that,

> Classroom culture takes on particular significance in PBL. When the goal is to foster inquiry, risk taking, persistence, and self-directed learning, culture is too important to leave to chance. Building the right culture for PBL requires ongoing effort and attention by both teachers and students. Instead of being hidden, a PBL culture needs to be openly constructed, reinforced, and celebrated. (PBL Works, 2022)

This quote emphasizes the importance of creating a space that is comfortable, flexible, and supportive. In order to achieve this type of space, I first start by allowing students to create the norms in our class. We talk about the kinds of behavior we would like to experience more of, and the types of behaviors that will harm our efforts to learn together. This document gets updated throughout the year, but it is an excellent place to start. When I begin the process of co-creating this vision, I first ask students to picture the best day of school they have ever experienced. I ask them to use their senses to think about how that best day felt, and then we open our eyes and I record those thoughts and feelings. In our class, students reported that they wanted to experience more collaboration, happy people, kindness, color, self-control, compliments, nature sounds, inclusion, and calm. These are just a few examples, and you can see the rest in the appendix (Figure 1).

Another way that I work to build this classroom culture is by providing spaces where students feel safe and comfortable. I use flexible seating in my classroom, including floor seating, lowered desks, bean bags, wobble stools, exercise balls, and traditional chairs and desks. Students get to request their seating each week, and then ultimately, I decide which space will work the best for them. They also have access to a Peace Corner, where they can retreat to when feelings get too overwhelming to get their work done.

Family Connection

Another strategy that I highly value, especially when doing work that is cultural and possibly personal, is to make a genuine connection with families. This school year, I am lucky because I am teaching many students that were previously my students in second grade. I have an excellent rapport with many of these families that I have known for years, and I feel very comfortable inviting them to be a part of our learning community. The families are both a source of knowledge, and an audience for students to share new learning.

For families I am not as familiar with, I make sure to ask them on the very first day what they would like to contribute to our classroom. I send home a student information sheet with some of the basic questions like the child's nickname or their emergency contact. But on the bottom of the sheet I also ask what the guardian's hopes are for their student this year. This allows them to share any personal goals they may have. Typically answers range from improving student reading and math abilities, to making friends or feeling prepared for middle school next year. I love this insight into the guardian's hopes, because it gives me a starting place when I send home any communication about their child. I also ask on this sheet if they would like to contribute anything to our class. Some families share that they have cultural teaching they would like to talk about, while others have experience in wildlife management or tutoring. Still others share that they are happy to provide any supplies that we may be needing in the classroom. No matter what the guardian offers, I make it a point to take them up on that offer at some point throughout the school year. I want to make it clear that I genuinely rely on families to support their child's success, and that I do not have all the answers for their children.

Tracking Student Progress

The third strategy that I utilize when working on these larger student projects is a Kanban Board. This is a workflow tracker that originated from Japan and allows you to determine the progress made towards project milestones. I first learned about Kanban Boards from a PBL Works article, and then I adapted this tool for my own classroom use. (Derian, 2019) I use these boards to denote specific tasks that need to be accomplished within our larger project, and then I make individual sticky notes for each student. I start everyone in the same column, and then as they finish tasks and check in with me, they get to move forward on the Kanban.

I try to meet with students as often as possible about their progress, because I know that one small teacher intervention could be the difference between a child who is stuck, and one whose path is clear to continue growing and working. Using the Kanban, sometimes I will meet with a group of students who are all behind and stuck on the same step. Typically, they are stuck on of a similar issue, so I can teach a mini-lesson and that will unblock their process.

The great thing about this tool is that I instantly can look and know which students are progressing in a timely fashion, and which students will need extra support to move forward. It also is enormously helpful to the students because they can check the board and get started on their current step without asking me what they are supposed to be doing. Sometimes I use the Kanban digitally in Google Jamboard or Google Slides, while other times I have made a paper poster that I display on the wall. PBL Works suggests that students should make their own team Kanban Boards, which gives the students more ownership of their work and progress. I have not yet tried this student-structured strategy, but perhaps I will in the future.

Classroom Activities

Socratic Circle

Students will use a case-based Socratic Circle to first dive into one topic in our unit. We will use this method to talk about the use of the San Francisco Peaks as a sacred and recreational area. In

order to prepare for a Socratic Circle, students will first need to complete background research on the topic. Students will have a handful of articles they are expected to read together in class, and then will be able to conduct their own research as they determine the need for more information. They will then generate a list of circle questions as a class. These questions will need to be ones that can be interpreted in a number of ways, and that require a longer answer than a solitary "yes" or "no." After this list is complied, students will have time to write down their own responses to these questions ahead of our circle. This is so that all students feel that they have adequate preparation ahead of time, and are not put on the spot in our circle. The point of the circle is to have a rich discussion about the topic, not to see how much the students have memorized about the issue. Therefore, notes will be welcomed, and should support the conversation to maintain a level of fact-based discussion. Students will be able to draw upon evidence to make their points, instead of just feelings or vague ideas.

As we begin the discussion, I will set the ground rules. Nobody is to speak over another person, and each person must speak at least two times in our circle session. I will ask the students if anyone is ready to start with an opening question from our list, and the conversation will begin there. I will do my best to verbally participate as little as possible so that the conversation remains student-driven. When it seems that the conversation around one question or topic is finished, I will ask for a student to suggest a next question, and I will continue to act as a moderator. I think that having the students direct their work in this way will allow for them to feel a strong sense of independence and student voice, especially when I center the power away from me and towards them as a collective.

Group Research

A major component of this project is for students to conduct research in small groups. Once they have been exposed to the 5 major places and concepts in this unit, they will then decide which topic was the most intriguing to them. They will take this topic and create a podcast about that topic, which will include multiple sides of the same issue. In order to do this reporting correctly, students will need to spend time in research groups. Once in these groups, they will develop need to know questions. These are things that they wonder or want to know more about in order to properly tell their story. When they have developed this list of "need-to-knows," they will be able to conduct focused research that will help move them toward their end goal of telling the complete story of this place and its people.

I find that typically students struggle with researching on their own because they are not sure how to complete searches. In the age of Google, students tend to just type their entire question into the search bar and then click on the very first result. This leads to research outcomes that are biased, as students do not know yet how to distinguish sponsored results from others. This can also lead students to incomplete results, as they are not using more specific search terms to find the information they are looking for. In order to teach more accurate search skills, we will do a mini lesson about how to search through online resources. Our school has a paid subscription to BrainPop, a site with teaching videos, articles, games, and quizzes. I will use the Brain Pop video on online sources to teach students how to find more reliable sources of information. I want students to know how to use more detailed searches, instead of only relying on Google to conduct their searches.

Another source of potential student struggle is recording research. Students tend to read, listen to, or watch their source material, but then have a hard time recording the information that will help to move their project forward. The "need-to-knows" will allow students to have more of an anchor to their focused research goals. They will use their need-to-knows in a recording sheet (see appendix), and will review their progress each day with their team to see what common threads they found while researching. They will then quickly draft a note with some next steps so that they are ready to begin working on that task at the start of the next learning session.

Podcast Recording

Recording their podcast will be the final piece to putting together their projects. After students are finished with their research, they will then have to determine the six main ideas they will speak about in their recording. They will put these ideas on one sticky note each, and will then use the organizing template in the appendix to arrange these notes in the order they would like to discuss them. We will use sticky notes so that students can test out the feel of different orders so they can tell the story in a way that makes sense to them and their listeners.

Once they decide on an order for their story, they will write the script for each section. They will need to include viewpoints from at least two perspectives, including the Indigenous perspective. They will also need to include a direct quote from an expert, community member, or other affected person from the situation. On the script template, I indicated that students need to include a blend of facts and narrative, and that they need to color code the facts in one color and the narrative in another. This will help students to visually check the blend of their storytelling, ensuring that it is neither too dry nor too opinionated without substance.

When scripts are written, students will find a quiet space in the school building to record their script. They will then process and edit their recordings, possibly adding music or other effective sound effects to lend production value to their podcasts. When they are finished, we will publish the podcasts to the school website, and have a listening party in the classroom with the students, their families, and community members invited.

Student Assessment Plan

Socratic Circle Participation

Students will be assessed on their participation in the Socratic Circle in a few different ways. First, I will take a formative assessment as students suggest different conversation topics and questions. If students struggle to come up with questions that are on-topic or could lead to a thorough discussion, that will tell me that perhaps we need to spend more time on question development.

The second way students will be assessed through this Socratic Circle is through their question preparation. Students will have time to research the discussion questions, and to then determine how they would like to answer each one. They can write down the answers to all of these questions if they would like, so they should be ready to share during the actual discussion. I will

look through their potential answers to make sure that they are thorough, address the question at hand, and use evidence.

Finally, students will be assessed on their ability to participate in the conversation itself. Students will come up with some basic ground rules for the conversation, and one of those rules will address the number of times they think everyone should speak out. If a student speaks out too infrequently, they will not receive the same score as a student who is able to share more information and appears to be more knowledgeable about the topics. In order to ensure that all students share, I may also have some of their answers in front of me and then prompt students to share those answers. Some students may have a hard time realizing that their opinions would fit well in a conversation, so I can help to remind them that they have a strong point to make.

Daily Assessments

Students will complete a daily exit ticket that follows up on the reading for the day, as well as the comprehension skill we worked on that day. This will be a question that students answer completely on their own, meaning they will read a selected text on their own and then respond to a question about that text. These will help to assess student reading comprehension as we learn about the different content areas, and could be used by the students in the later parts of the project as sources of information. They could also be used as a way to keep track of which places seemed to hold the most interest for the students, so they can more easily decide on a topic when it comes time to do group research.

Podcast Work

Students will be assessed on their participation in the podcast product. I will assess all of the worksheets that I mentioned in the appendix. Students will be scored on the quality of the need-to-know questions they identified, how well they answered those questions with well-sourced information, and how they used that information to develop their storyboard. They will then be assessed on the quality of their script, and how well they produce the final podcast.

Alignment with Standards

Arizona State Standards

Due to the length of this unit, students will explore a multitude of Arizona state standards. For the purposes of this curriculum unit, I will go into the three biggest areas, which include Reading Informational Text, Speaking and Listening, and Writing. A teacher utilizing this curriculum unit could easily include many more standards, especially if they chose to spend about 8 weeks on this unit.

Reading Informational Text Standards

In this unit, students will read a variety of informational texts about each sacred place we are studying. The biggest of these informational text standards that I cover in the unit is Arizona standard 4.RI.9, which says that students will “Integrate information from two texts on the same

topic in order to write or speak about the subject knowledgeably." This is the fourth-grade standard on this topic, while the standard I am using to assess the fifth-grade students reads that students will, "draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently." (Arizona Department of Education, 2016) As students conduct research and read through the assigned articles, they will need to put these standards to use in order to gather pertinent information for their podcast script.

Speaking and Listening Standards

As students produce their podcast, they will address the speaking and listening standard 4.SL.4, which states that students will, "report on a topic or text, tell a story, or recount an experience in an organized manner, using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace (Arizona Department of Education, 2016)." The fifth-grade equivalent standard (5.SL.4) says that students will "report on a topic or text or present an opinion, sequencing ideas logically and using appropriate facts and relevant, descriptive details to support main ideas or themes; speak clearly at an understandable pace." (Arizona Department of Education, 2016) In order to produce a podcast that is on topic, factually accurate, and tells a story to the listeners, students will need to demonstrate mastery of these speaking and listening standards.

Writing Standards

Before students are able to record their podcast episodes, they will need to conduct research by gathering information, taking notes, and citing their sources. This is covered in the writing standard 4.W.8, which states that fourth grade students will, "Recall relevant information from experiences or gather relevant information from print and digital sources; take notes, categorize information, and provide a list of sources," while fifth grade students will, "Recall relevant information from experiences or gather relevant information from print and digital sources; summarize or paraphrase information in notes and finished work, and provide a list of sources."

Department of Diné Education Standards

This curriculum unit directly ties to a fourth- through sixth-grade standard in the Department of Diné Education history standards. The larger concept says that "I will understand connections between my culture, sacred sites and historical events." The more specific performance objective states that, "I will research the sacred sites within my community." This standard stood as the inspiration to the entire curriculum unit, as all of the content revolves around learning about sacred places in the Northern Arizona/Colorado Plateau region.

Resources

Teacher Background Reading

Arizona Daily Sun. (2007, March 12). Key Dates in Arizona Snowbowl History. *Arizona Daily Sun*. This article is extremely helpful as a timeline for teachers to understand the order of events in the devleopment of Snowbowl.

Benally, K. (Director). (2004). *The Snowbowl Effect* [Motion Picture]. This movie explains the most recent controversey over the use of reclaimed water for snow-making at Snowbowl.

Carlisle Indian School Project. (No date). "Honoring the children, Giving coice to the legacy." https://carlisleindianschoolproject.com/ Accessed December 8, 2022.

Dickey, S. L. (2011, May). SACRILEGE IN DINÉTAH: NATIVE ENCOUNTERS WITH GLEN CANYON DAM. Albuquerque, New Mexico: The University of New Mexico. This dissertation does a great job of explaining the significance of Glen Canyon to the Diné, and how the land was given to the US Bureau of Reclamation.

Environmental Protection Agency. (2022). Superfund: CERCLA overview. https://www.epa.gov/superfund/superfund-cercla-overview Accessed December 8, 2022.

Environmental tug-of-war: Treated effluent on the San Francisco Peaks. (No Date). Arizona Journal of Environmental Law and Policy. https://www.ajelp.com/single-post/2018/09/28/environmental-tug-of-war-treated-effluent-on-the-san-francisco-peaks Accessed December 5, 2022.

Jarratt-Snider, K., & Nielsen, M. O. (2020). Introduction. In M. O. Nielson, & K. Jarratt-Snider, *Indigenous Environmental Justice* (pp. 9-10). Tucson: The University of Arizona Press. This text explains the difference between environmental justice and Indigenous Environmental Justice.

Pasternak, J. (2010). *Yellow Dirt.* New York: Free Press. This book provides detailed insight into the many ways that uranium mining has affected and continues to affect the Navajo Nation, and was instrumental to my own work.

Student Reading

Capachi, C. (2014, March 26). The last of the Navajos to live at Wupatki National Monument? *The Washington Post*. This article is very useful to explain the Peshlakai family's fight to stay on their ancestral land at Wupatki.

Dunbar-Ortiz, R. (2014). *An Indigenous Peoples' History of the United States for Young People.* (J. M. Reese, Ed.) Boston: Beacon Press. Students could read part or all of this text in order to have a better understanding of Indigenous peoples in the United States.

Young, B. (2022). *Healer of the Water Monster.* Harper Collins. This novel explores the life of a young Navajo boy who visits his Nali on the reservation in the summer. He meets a Water Monster who is sickened by radiation poisoning. This theme ties in really nicely

with the Monument Valley mining issue, and serves as an overarching novel study that we are using to accompany the non-fiction reading.

Materials for Classroom Use

Item 1: Unit Timetable. This is the overall order and timing I am using to teach this curriculum unit, and can be used by other teachers wishing to use this unit.

Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
Study overview of Wupatki National Monument.	Study overview of Monument Valley mining.	Study overview of Glen Canyon and Lake Powell.	Study overview of Grand Canyon Inter-Tribal Heritage Center.	Students focus on the place of their choosing, creating their podcasts.	Students finish podcasts, and we have a publishing party.

Item 2: Research Note-Taking Template

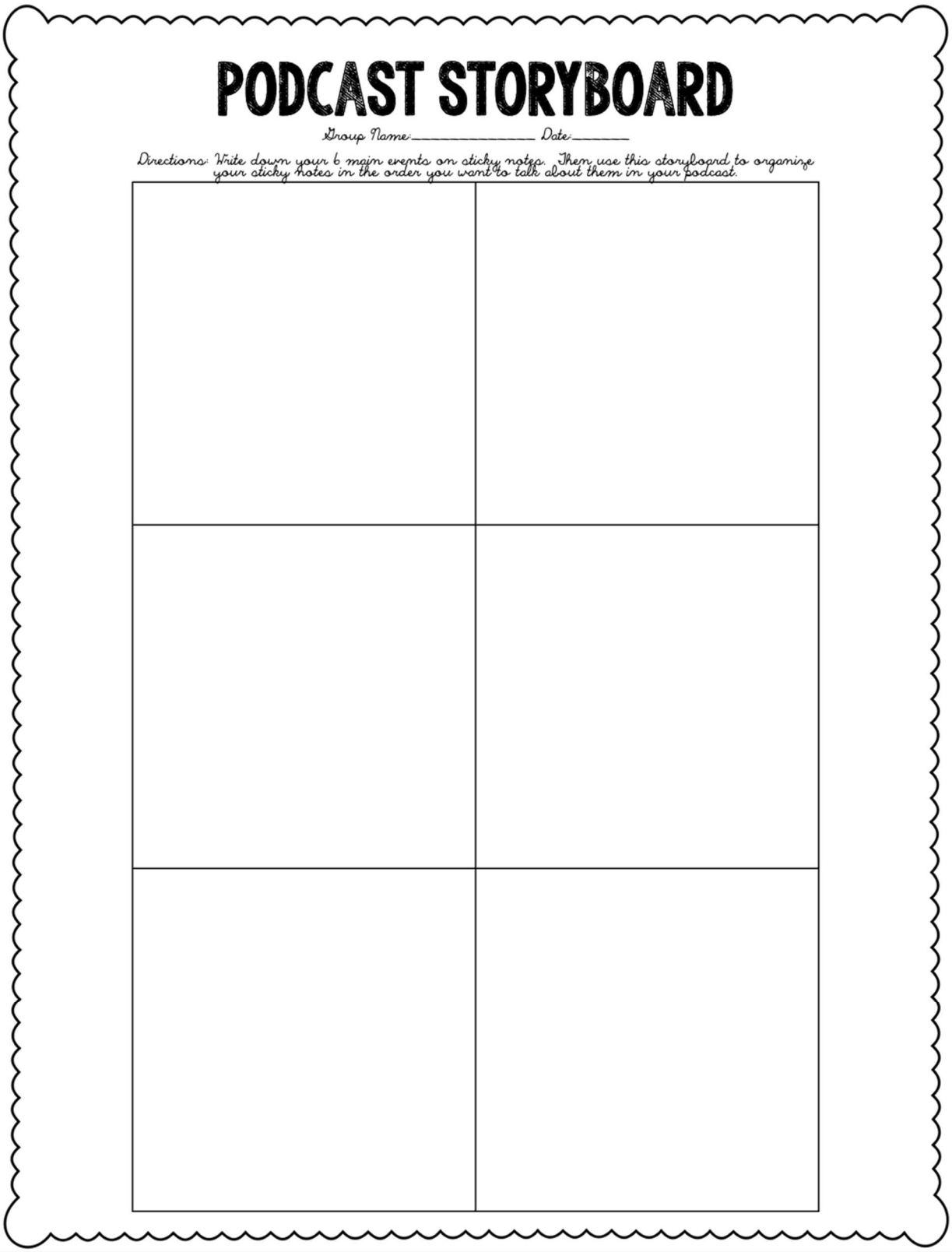
RESEARCH NOTES

Name:_____ Date:_____

Directions: Fill in your need-to-know questions in the left column. Then record any helpful research facts in the right column, along with the source you found the information.

Need to know	Research

Item 3: Podcast Storyboard Template



Item 4: Podcast Script Template

PODCAST SCRIPT

Name:_____ Date:_____

Directions: Write the script to your section of the podcast here. In your section, you need to include at least three facts, and some narrative sections. Highlight your facts in green, and your narrative in yellow.

Appendix

Figure 1. Student vision for the classroom.

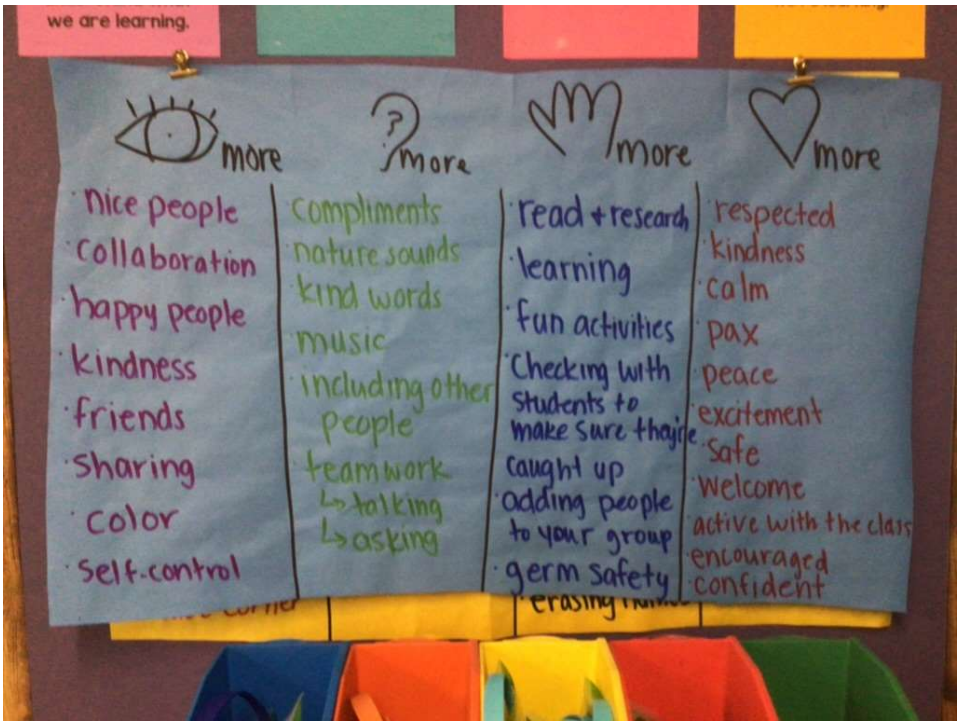


Figure 2. Lake Powell in August 2017 versus August 2022 (Carlowicz, 2022)