

Safe Drinking Water and Clean Water Act

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Curriculum Unit project

Safe Drinking Water and Clean Water Act

Introduction

For the Dine Institute I focused on developing a curriculum unit on “water- to”, which I will use in my Dine Language II classroom. I am a Dine Language teacher, not a general education teacher. The sole purpose of my position is to teach our Dine language to our students, who are losing their heritage language. My first responsibility is to re-establish, enhance, and ignite fluency of our Dine language within students. The general concepts of the unit will be translated into the Dine language, which will be difficult, because our science vocabulary in our native language is very limited. I will need to code switch between English and Dine language.

Clean water and safe drinking water, pursuant to the Clean Water Act and Safe Drinking Water Act will be the primary focus of this curriculum unit with an insight on pollution. Very brief inclusion of the Dine teachings of t0 a[aanaashch77n d00 t0biyazhe are included. Although the program calls for utilization of Culturally Responsive teachings concepts and strategies and establishing sustainable empowerment for growth to foster mutually beneficial cultural and content knowledge (Castagno, ND) requirements were also relative to the laws and water regulations.

Classroom and School Environment

Ganado is located in the central area of the Navajo Reservation. The school is a Unified school district serving surrounding communities; Cornfields, Steamboat, Jeddito, Greasewood, Chinle, Window Rock, Kinliichee, Sawmill, Nazlini, Klagetoh, Wideruins, Keams Canyon, and Steamboat. The enrollment consists of 97% Dine students, and 3% a non-Dine students. This is a school of diversity with variables at different level of Dine language, cultural knowledge, and usage. Some students are currently still living according to the Dine Way of Life in remote areas, while others live in housing developments, and a small percentage are actually homeless. Each student brings a uniqueness of their background into the classroom. There are conditions that create limitations to student progress in academics. Although our school is currently in a Letter grade of “C” status in the State of Arizona, testing data reveals a need for high levels of intervention in reading, mathematics, and science content areas.

Being a first-year teacher at Ganado High School has brought an awakening that our high school students are in a situation where our Dine language is diminishing. Most of the students are not fluent or proficient in either the English or Dine Language. The students are very limited in the native language, and require a prerequisite of listening and speaking through the use of TPR, Total Physical Response. Our Dine students are wholistic learners and the use of hands on lessons with concrete activities are more beneficial and comprehensive. The Dine language class requires enrollment for the entire school year, bringing these students together to learn, relearn, and enhance the Dine

language through the Dine language lessons. Speaking and comprehending the Dine language is almost impossible, due to non-usage of the language outside the school. It was so sad, my first day of class., when I spoke in Dine language and my students had no idea what I was saying. So the next day I started singing and had students sing with me, and to them that was funny. “Okay, good,” I thought. I had found a way or a place to start, a connection. There is limited research to justify this statement. The concept is that of instilling in each student, their own learning panache, and an aspiration that is significant and results in becoming aware of their language and identity with a conscientiousness to a resiliency of regaining the heritage language.

This particular curriculum will consist of clean drinking water and provisions of congressional legislation on Safe Drinking Water Act, which will provide an awareness of water pollution and being able to take water sample and analyze it. Incorporating Dine concepts into the requirements for this curriculum is very difficult. A lot of the Dine teachings have been cut from this unit to meet the guidelines of the program. The same for the scientific portion, mostly this unit is a focus on the law or legislation of the Safe Drinking Water Act (1974, amended 2004), and how pollution is a major factor as a contaminant.

1. Context and Rationale

The historical aspect and community awareness of safe drinking water.

The Safe Drinking Water Act (1974, 2004) protects our health by regulating public drinking water systems “and their sources, including lakes, streams...underground wells..” and more. (EPA 2004). Efforts to protect clean surface water is not always visible at the local levels. The remoteness of the communities on the Navajo (Dine) Reservation hinders communication, news, or resources. The only source of any communication is the transistor radio- KTNN and local chapter meetings. There is a trend with cellphones and internet access with the younger generations. However the elders and some of the parents are still not exposed to the technology as well as their children and grandchildren, so, the communities are not aware of the water pollution, however there were some practices that could be considered as treatment for safe drinking water with out today’s osmosis and water treatment procedures. I will interject an experience of how my mother and grandmother used to treat the water, which was collected from the rain and snow and made it into drinking water. With the rain water, my mother sprinkled a handful of baking soda on top of the water and let it sit until the baking soda filtered the muddy contents to the bottom of the bucket, then she poured off the clear water, which was used for drinking and cooking. The snow was boiled on the stove and was used for drinking and cooking. Later, the community became aware of the windmills. Within the community in Pinon, Arizona there are three windmills that were installed. The holding tank of water was still not covered, therefore exposed to contamination, I think the windmills were mostly for the animals, but it was used for drinking water, water was hauled in barrels to the homes and used for consumption, until Navajo Tribal Utility installed the piping for water to the homes in the late 1980’s. The resources and

awareness of the unsafe drinking water is very limited. In essence, it is the student that brings any awareness or resources to their family and homes. The sampling for safe drinking water is not being addressed at the homes and very minimal at the schools. In most cases, the consumption of unsafe drinking water takes place. In one of our local school, there was an outbreak of Hepatitis from drinking fountains. The most important objective for the students to gain from this curriculum unit is to empower them with the knowledge, understanding and resources to sample their drinking water at home. Students will learn to use a water sample kit. Upon the findings of their water monitoring, which may result in contamination they will learn to voice their concerns to the appropriate agency for resolution.

Safe Drinking Water for the Human Body

The seriousness of maintaining bodily hydration is absolutely necessary for good health. This topic will also allow the students to research body dehydration and unsafe drinking water conditions in other parts of the nation, including an introduction to symptoms/conditions of body dehydration and heat exhaustion, how to assist in getting medical attention, and providing a flyer on staying hydrated. According to the Global Healing Center, (ND) the human body is a machine designed to run on water and minerals. The body is about 72% water and water is vitally important for every important bodily function, without water, the human body doesn't work, and the quality of the water consumed can have a dramatic impact on a person's health. The human body has tremendous healing abilities and water is a major component. With proper nourishment and hydration, the body instinctively strives to be young and healthy, working to repair and rebuild bone, regenerate and replace tissue, and attack hostile organisms. In each of these miraculous processes there is one common factor – water. The brain consists of over 75% water and controls nearly every one of the body's processes by sending and receiving electrical signals through the nervous system. [1] Tiny messengers called “transporter proteins” travel at the speed of light to carry life giving messages to every cell and organ. Like any communication network, the purity of the carrier affects the speed and clarity of the signal. If the fluid, mostly water, inside of nerves is laced with traces of chemicals or toxic metals, the result is a delayed and distorted signal (Global Healing Center, ND). Many experts believe signal distortion is linked to nervous system disorders like ADD, chronic fatigue syndrome, Alzheimer's, and mood imbalance. Water consumption directly affects energy levels. Rather than drinking more water, many people turn to stimulants like caffeine and sugar to artificially boost their energy, quickly leading to a downward spiral. Caffeine and sugar are diuretics and cause your body to lose water, resulting in a further loss of energy and a dependency on artificial energy. The body's detoxification system is a major component to good health and relies heavily on adequate hydration. Filtering and flushing out toxins is very water intensive. It's just another one of the reasons that staying hydrated has a tremendous impact on health. We've all heard that eight glasses of water each day is an absolute minimum for the body to maintain basic functions. Every time you exhale, blink an eye, or make a movement, water is used. Even the beating of your heart requires water. Keeping in mind that eight glasses is the minimum and one half your body weight in ounces is a better measuring stick (for example, if you weigh 180 pounds, drink 90 ounces of water per day).

My curriculum will include the infusion of our traditional teachings on the Natural Laws of the four sacred elements; earth, water, air, and fire/light. The western education concept of teaching is to separate the content of a subject into many subjects. The traditional teachings of our elders are in global concepts, the interrelations/connections, seeing the wholistic picture. Students will become familiar with the traditional teachings: the natural laws and the safe clean water act and simplify a comparison with a cause and effect. Congress enacted the Safe Drinking Water Act in 1974 (amended 2004), to regulate contaminants in public drinking water systems (EPA, 2004).

2. Content Objectives

The objectives on my curriculum unit will focus on the governmental environmental acts put in place by these programs/departments at the national, and native levels. The unit will also cover the natural laws of Dine Traditional teachings. Throughout the lesson there will be comparisons and contrast of both the fundamental and Environmental Acts-man made laws. The historical aspect of the natural laws from the first, second, third, and fourth worlds will be briefly covered. The perspectives of our elders on the four sacred elements: earth, water, air, and fire/light.

Summary of the Clean Water Act. 33 U.S.C. §1251 et seq. (1972)

The Clean Water Act (CWA) establishes the basic structure for regulating discharges of pollutants into the waters of the United States and regulating quality standards for surface waters. The basis of the CWA was enacted in 1948 and was called the Federal Water Pollution Control Act, but the Act was significantly reorganized and expanded in 1972. "Clean Water Act" became the Act's common name with amendments in 1972. This environmental Act will be covered in the lesson in general at the national level and more elaboration on Dine Environmental Acts, or Indigenous peoples policies/regulations. Raising or voicing why questions to environmental office on our reservations.

Under the CWA, EPA has implemented pollution control programs such as setting wastewater standards for industry. EPA has also developed national water quality criteria recommendations for pollutants in surface waters. The CWA made it unlawful to discharge any pollutant from a point source into navigable waters, unless a permit was obtained (EPA. N.D. "Summary of the Clean Air Act.").

33 U.S. Code § 1251.Congressional declaration of goals and policy.

- it is the national goal that the discharge of pollutants into the navigable waters be eliminated by 1985;
- it is the national goal that wherever attainable, an interim goal of water quality which provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water be achieved by July 1, 1983;

- it is the national policy that the discharge of toxic pollutants in toxic amounts be prohibited;
- it is the national policy that Federal financial assistance be provided to construct publicly owned waste treatment works;
- it is the national policy that programs for the control of nonpoint sources of pollution be developed and implemented in an expeditious manner so as to enable the goals of this chapter to be met through the control of both point and nonpoint sources of pollution.

Administrator of Environmental Protection Agency to Administer Chapter:

- Public participation in development, revision, and enforcement of any regulation. in the development, revision, and enforcement of any regulation, standard, effluent limitation, plan, or program established by the Administrator or any State under this chapter shall be provided for, encouraged, and assisted by the Administrator and the States.
- Procedures utilized for implementing chapter. It is the national policy that to the maximum extent possible the procedures utilized for implementing this chapter shall encourage the drastic minimization of paperwork and interagency decision procedures, and the best use of available manpower and funds, so as to prevent needless duplication and unnecessary delays at all levels of government.
- Authority of States over water. It is the policy of Congress that the authority of each State to allocate quantities of water within its jurisdiction shall not be superseded, abrogated or otherwise impaired by this chapter.

Various Sources of Water Pollution

There are various classifications of water pollution. The two chief sources of water pollution can be seen as Point and Non-Point. Point refers to the pollutants that belong to a single source. An example of this would be emissions from factories into the water. Non-Point, on the other hand, means pollutants emitted from multiple sources. Contaminated water after rains that has traveled through several regions may also be considered as a Non-point source of pollution.

1. Industrial waste

Industries produce a huge amount of waste which contains toxic chemicals and pollutants which can cause air pollution and damage to people and the environment. They contain pollutants such as lead, mercury, sulfur, asbestos, nitrates, and many other harmful chemicals. Many industries do not have a proper waste management system and drain the waste in the fresh water which goes into rivers, canals and later into the sea. The toxic chemicals have the capability to change the color of water, increase the number of minerals, also known as eutrophication, change the temperature of water and pose a serious hazard to water organisms (Muralikrishna, I.V. and Manickam, V., 2017).

2. Sewage and wastewater

The sewage and wastewater that is produced by each household is chemically treated and released into for various uses according to the United States Geological Survey, or USGS, (USGS), nd (a)). The sewage water carries harmful bacteria and chemicals that can cause serious health problems. Pathogens are known as a common water pollutant; The sewers of cities house several pathogens and thereby diseases. Microorganisms in water are known to be causes of some very deadly diseases and become the breeding grounds for other creatures that act as carriers. These carriers inflict these diseases via various forms of contact onto an individual. A very common example of this process would be Malaria .

3. Mining activities

Mining is the process of crushing the rock and extracting coal and other minerals from underground. These elements when extracted in the raw form contains harmful chemicals and can increase the number of toxic elements when mixed up with water which may result in health problems. Mining activities emit a large amount of metal waste and sulphides from the rocks which is harmful to the water (USGS, nd (b)).

4. Marine dumping

The garbage produced by each household in the form of paper, aluminum, rubber, glass, plastic, food is collected and deposited into the sea in some countries. These items take from 2 weeks to 200 years to decompose. When such items enter the sea, they not only cause water pollution but also harm animals in the sea, according to the National Oceanic and Atmospheric Administration, or NOAA, (2019a).

5. Accidental oil leakage

Oil spills poses a huge concern as a large amount of oil enters into the sea and does not dissolve with water; thereby opens problem for local marine wildlife such as fish, birds and sea otters. For e.g.: a ship carrying a large quantity of oil may spill oil if met with an accident and can cause varying damage to species in the ocean depending on the quantity of oil spill, size of the ocean, the toxicity of pollutant (NOAA, 2019b).

6. The burning of fossil fuels

Fossil fuels like coal and oil when burnt produce a substantial amount of ash in the atmosphere. The particles which contain toxic chemicals when mixed with

water vapor result in acid rain (EPA, 2019 c). Also, carbon dioxide is released from the burning of fossil fuels which result in global warming (National Aeronautics and Space Administration [NASA], 2019).

7. Chemical fertilizers and pesticides

Chemical fertilizers and pesticides are used by farmers to protect crops from insects and bacterias. They are useful for the plant's growth. However, when these chemicals are mixed up with water produce harmful for plants and animals. Also, when it rains, the chemicals mix up with rainwater and flow down into rivers and canals which pose serious damages for aquatic animals. (EPA 2005).

8. Leakage from sewer lines

A small leakage from the sewer lines can contaminate the underground water and make it unfit for the people to drink. Also, when not repaired on time, the leaking water can come on to the surface and become a breeding ground for insects and mosquitoes (USGS, nd, a).

9. Global warming

An increase in earth's temperature due to the greenhouse effect results in global warming. It increases the water temperature and results in the death of aquatic animals and marine species which later results in water pollution (NASA, 2019).

10. Radioactive waste

Nuclear energy is produced using nuclear fission or fusion. The element that is used in the production of nuclear energy is Uranium which is a highly toxic chemical. The nuclear waste that is produced by radioactive material needs to be disposed of to prevent any nuclear accident. Nuclear waste can have serious environmental hazards if not disposed of properly. Few major accidents have already taken place in Russia and Japan (U.S. Energy Information Administration, 2019).

11. Urban development

As the population has grown, so has the demand for housing, food, and cloth. As more cities and towns are developed, they have resulted in increasing use of fertilizers to produce more food, soil erosion due to deforestation, increase in construction activities, inadequate sewer collection, and treatment, landfills as more garbage is produced, increase in chemicals from industries to produce more materials (EPA, 2017).

12. Leakage from the landfills

Landfills are nothing but a huge pile of garbage that produces the awful smell and can be seen across the city. When it rains, the landfills may leak and the leaking landfills can pollute the underground water with a large variety of contaminants (Talalaj and Biedka, 2016).

13. Underground storage leakage

Transportation of coal and other petroleum products through underground pipes is well known. Accidental leakage may happen anytime and may cause damage to the environment and result in soil erosion (EPA, 2019).

Water pollutants also include both organic and inorganic factors. Organic factors include volatile organic compounds, fuels, waste from trees, plants etc. Inorganic factors include ammonia, chemical waste from factories, discarded cosmetics etc. The water that travels via fields is usually contaminated with all forms of waste inclusive of fertilizers that it swept along the way. This infected water makes its way to our water bodies and sometimes to the seas endangering the flora, fauna and humans that use it along its path. (USGS, n.d. (c))

The current scenario has led to a consciousness about water preservation and efforts are being made on several levels to redeem our water resources. Industries and factory setups are restricted from contaminating the water bodies and are advised to treat their contaminated waste through filtration methods. People are investing in rainwater harvesting projects to collect rainwater and preserve it in wells below ground level.

The water cycle and its representation in the turquoise necklace.

In the daily lives of our Dine people, the four sacred elements are in our prayers, in our songs, and a bucket of water with a burning fire in the middle of the Hogan is Dine fundamental teachings. Each family identifies this set up as the song in the blessing way addressed the place for water and fire. Only when these elements are present does a family move into their home.

- The prayers includes:
- Kood0 hozho doleeh shim1 nahashdz1 1n, yadi[hii[shit'aa',
- h1yoo[kaa[, ni'hodo[iizh, nohotsooi, chaahaa[hee[,
- Sisnaajini, Tsoodzi[, Dook'oos[iid, Dibe Nitsa, Dzil Na'ohdii[I'I, Dzi[Ch'oo[I'I,
- Naadaa' a[ghai, Naadaa' a[tsooi,
- Yoodi a[taaz ei, Ni[iizh a[taaz ei,
- **T0 a[aanaashchii, T0 biyazhe.....**

And, the songs are in the same order in the chants of the Blessing way. The simple chants can be translated and interpreted in the Dine language. So, water is a way of life

in our daily lives. But, the Dine language is disappearing from our daily lives and replenishing the teaching is a challenge.

48 Natural Laws (Dine Teachings)

- ❖ (Mother) Earth 6 female laws + 6 male laws = 12 laws
- ❖ (Mother) Water 6 female laws + 6 male laws = 12 laws
- ❖ (Father) Fire/light 6 female laws + 6 male laws = 12 laws
- ❖ (Father) Air 6 female laws + 6 male laws = 12 laws

The natural laws teaching not only how to maintain and protect the four sacred elements for future generations to come, as they would make reference to preservation for their children, grandchildren, and great grandchildren and sustainability of the life on Mother Earth, Mother Water, Father Air, and Father light/fire. The elements introduce the teachings of duality. The Earth and water being positive forces or energy, and the air and fire/light being negative forces or energy. And, the concept of all life being a male or female.

The historical aspect of the Emergence Era, reflects the four elements: To (water), Nahasdzaan (Earth), Nilch'I (Air), and K'o – light (fire-light).

These seasonal stories can only be told in the winter. Water stories surfaced in the third world (Nii'haltso) of emergence, where the two rivers; Little Colorado River and Rio Grande Rivers were identified. The story of the separation of sexes happened in the third world (Nii'haltso). How the third world was destroyed by the flood, and the story of the coyote stealing the water babies. The role of certain animals in the emergence; turkey, wiinaashch'iidii, badger, and so on. The first world was destroyed by the fire, the second world destroyed by the wind, the third by the water and today we are in the fourth world. Preservation of the sacred elements is a must for the generations to come. And, maintaining as much of the eco-system is looking at survival for our people. This is a seasonal sensitivity lesson.

To alanaashchiin doo To biyazh

Introductory and foundations to Dine language by covering the basic language skills; listening, speaking and comprehending conversational Dine language to assess the levels of proficiencies in each class. Basic statements with response TPR vocabulary. Dine Education Standards: Din4 bizaad d00 bee e' e' 00lii[choosh'77go bee 77nist'33 d00 beey1sht'i' d00bee ha'as77dgo biniy4hig77 bik'i' d77sht77hdo. Concept I: Nits1hakees; Iisist'32'go Din4 bizaad bik'I'diisht88h doolee[. Objectives;)lta' g0ne' t'11 1kwij9 saad bee shich'i' yati'igii bik'idiisht88h doolee[. K0n7n44h shi'di'niigo saad choo'7n7g77t'11 1k0t'4ego bik'eh 4sh'88 doolee[. T'11 h1ida t'11 n7zaadj7 halne'gp bik'idiisht88h doolee[. Al'22 1dahoot'4ej8 saad chodao'7n7g77 yisists'32'go b44hasin doolee[.

3. Teaching Strategies

Instructional planning will be more of a learner-centered teaching. In the learner-centered model, the teacher takes on the role of facilitator: guide, coach, or conductor. The students are doing the work of problem solving, reviewing, discussing and creating, Maryellen Weimer, 2013. Planning an unbiased, unprejudiced lesson is very challenging, especially if more than two different cultures are in the class. Cultural sensitivity to all the diverse representations is a must, this being culturally competent. Because people are more likely to act out of unconscious or hidden bias, knowing that you have a bias for or against a group may cause you to compensate and more carefully consider your possible responses or actions. Acknowledging biases often opens doors for learning and allows people to consciously work for harmony in classrooms and communities (Moule, J. 2012). Being a teacher of Dine language, consideration of cultural sensitivity is very delicate to each student. Although most of the students are from the Dine Tribe, there's different beliefs, including traditional beliefs, Christianity, and other tribes with different backgrounds. Christian families do not want any traditional or cultural teachings for their children, so this can be infringement on the beliefs of the home teachings.

Even as a teacher, the legislation on the Safe Drinking Water Act (SDWA) is intriguing and overwhelming for an awareness and comprehension. So, simplifying the lessons as much as possible will be the focus. Teaching high school students with diverse background teachings becomes complicated and confusing. The best scenario is researching and allowing the students to apprehend the information and knowledge from the lessons.

4. Classroom Activities

This unit will be introduced with background information or knowledge on water (To). I did not realize that there was a vastness of information on water, until I started to research the topic. I did not know where to start.

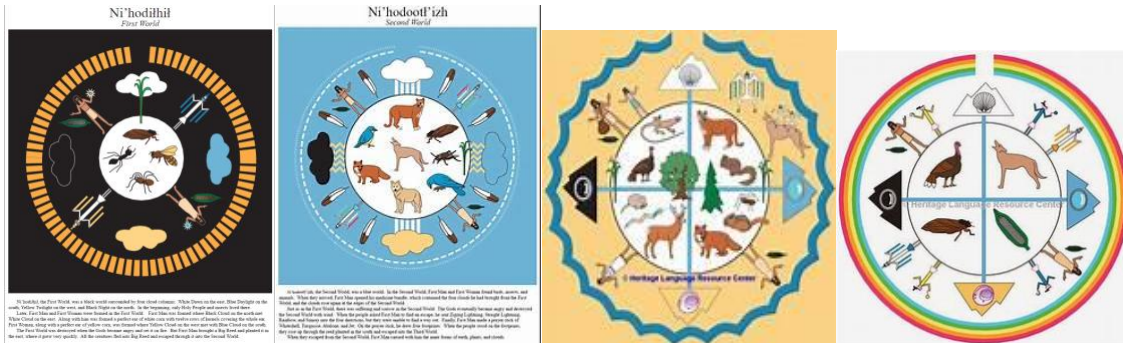
Lesson 1

Introduce the historical detail on community drinking water. Presentation on how the community people got water in the days of our grand parents. Provide an awareness on the progress of how the communities have safe drinking water today. Discussion on the pros and cons of bottled water.

Lesson 2

The 48 natural laws regarding the four sacred elements: earth, water, air, and fire/light will be covered for background information to the students. The four world of emergence will also be introduced for background information, this can only be covered in the wintertime. The posters on the four worlds of emergence (shown below) will be used to teach the emergence story and how each world was destroyed, the third world being destroyed by the water, flood. The contents of traditional prayer including the four sacred elements will be introduced for clarity and information also. These posters will be

used to briefly identify the events in the four worlds. In the black world, which is the first world, the meeting of the first man and first woman, and there was a prophecy that there is a group of living creatures that will consume the earth and destroy mother earth, mother water, father air, and father sun (light/fire), these creatures were told to go to the other side of the world. And, it was told that the destruction of the sacred elements was initiated by these creatures within the different levels of the first to fourth world, the question is what will destroy the fourth world?



Lesson 3

The teachings of the turquoise necklace, the river is the earth's necklace, The necklace is the female river and the male river. It represents the water cycle (Lorenzo Max, June 25, 2019. NAU Dine Institute presentation). The sacred names of the water; t0 a[ahnashchiin d00 t0 biyazhe. This water evaporation and condensation cycle will be compared with the science standard on the water cycle. This lesson will be exciting because I am very impressed with the new story that was shared with us by Mr. Raymond Maxx.

The Water Cycle

This section is for the Dine language familiarity in vocabulary and comparison with/of the teachings of the turquoise necklace and its teachings of the water cycle.

Of all the water that exists on our planet, roughly 97% is saltwater and less than 3% is fresh water. Most of Earth's freshwater is frozen in glaciers, ice caps, or is deep underground in aquifers. Less than 1% of Earth's water is freshwater is accessible to us to meet our needs and most of this water is replenished by precipitation, a vital component of the water cycle, affecting every living thing on Earth (Graham, Parkinson, and Shahine, 2010).

Water is the main reason for life on Earth, continuously circulates through one of Earth's most powerful systems: the water cycle (Graham, Parkinson, and Shahine, 2010). The continual movement of water among the Earth's atmosphere, oceans, and land through evaporation, condensation, and precipitation. Vocabulary: 1) atmosphere-the envelope of gases that surrounds Earth, 2) evaporation-the process by which water molecules in liquid

water escape into the air as water vapor, 3) condensation-the process by which molecules of water vapor in the air becomes liquid water, 4) and, precipitation-in meteorology. Other vocabulary words include watersheds, monsoons, droughts, and glaciers. Earth's water is finite, meaning that the amount of water in, on, and above our planet does not increase or decrease.



Lesson 4

Do a KWL chart on the human body and how water is important to being healthy. List what the students are aware of and list what they want to learn, and what they have learned. This chart will be filled in by students at the beginning, during, and at the end of the lessons.

Lesson 5

Introduce to the students the Office of Water (OW), who ensures drinking water is safe, and restores and maintains oceans, watersheds, and their aquatic ecosystems to protect human health, support economic and recreational activities, and provide healthy habitat for fish, plants and wildlife (EPA. N.D.). There is lack of monitoring of safe drinking water in our communities, unless there is an outbreak of a certain illness, there is absolutely no evidence of water sampling. How to take a water sample and read the findings to ensure that there is safe drinking water.

Lesson 6

Have students get familiar with sampling their drinking water by taking a water sample of their water source. And, analyze the sample using the home water sampling kit. This can be done with the whole class. Have students compare and find resources to certain local agencies if the water sample shows some contamination.

Link to finding water sampling kits online.

https://watertestingkits.com/shop/?orderby=popularity&gclid=CjwKCAjw0tHoBRBhEiwAvP1GFZCXIzfsHlcIMWVRyxFymPyDADp7lRQd8uzq2jMK3Eu4CY3st4JZnBoCQgIQAvD_BwE

EPA sets legal limits on over 90 contaminants in drinking water. “The Safe Drinking Water Act (SDWA) gives individual states the opportunity to set and enforce their own drinking water standards if the standards are at a minimum as stringent as EPA's national standards (EPA 2017, b). The legal limit for a contaminant reflects the level that protects human health and that water systems can achieve using the best available technology. EPA rules also set water-testing schedules and methods that water systems must follow (EPA 2017 b).

Lesson 7

Water pollution is a focus that needs to be addressed at all levels of the government, indeed there are legislation in place from the national level, state and tribal entities, but it more on paper, and not really being enforced, especially on Indian lands. Have students research and identify water pollution on Indian lands and how it is being addressed, and by whom.

Lesson 8

Provide this chart and have the students research the contaminant types in a group. The Safe Drinking Water Act (SDWA) gives individual states the opportunity to set and enforce their own drinking water standards if the standards are at a minimum as stringent as EPA's national standards.

Below are the drinking water rule pages grouped by contaminant type.

Contaminant Type	Regulation
Chemical contaminants	<u>Arsenic rule</u> <u>Chemical contaminant rules</u> <u>Lead and copper rule</u> <u>Radionuclides rule</u> <u>Variance and exemptions rule</u>
Microbial contaminants	<u>Aircraft drinking water rule</u> <u>Ground water rule</u> <u>Stage 1 and stage 2 disinfectant/disinfection byproducts rule</u>

Contaminant Type	Regulation
	<u>Surface water treatment rules</u> <u>Total coliform rule and revised total coliform rule</u>
Right-to-know rules	<u>Consumer confidence report rule</u> <u>Public notification rule</u>

Unregulated contaminants

EPA uses the Unregulated Contaminant Monitoring Program to collect data for contaminants suspected to be present in drinking water, but that do not have health-based standards set under the SDWA. Every five years EPA reviews the list of contaminants, largely based on the Contaminant Candidate List (EPA, 2018).

5. Student Assessment Plan

Assessment of the lessons listed above will be through the following formats; summative, formative criterion-reference, and student self-assessment. There will be a rubric for the research assignments and group work. A reflection of this unit will be done with the KWL chart displaying entries into each section. Posters, findings, drawings and other classroom activities will be displayed.

6. Alignment with Standards

Dine Culture Standards – Navajo Nation

Concept 3 – Iina

Bits’33d00 bee da’iin1anil baa 1konisin doleel.

I will implement and recognize the Din4 lifestyles.

- PO 2 – I will research the cultural stories relevant to land and water.
K4yah d00 Nahasz1 ln d00 t0 hane’ b7dad44t’I’7g77 naashkaah dooleel.

Concept 2 – Nahat’1

- Nahat'1 bits'33d00 anoot8[7g77 bik'ego 1n7sht'4e doolee].
PO 3 – I will practice respect of nature in my daily life.

As a teacher of Dine language, I will use the Dine culture standards, because my class is funded by the Navajo Nation Johnson O'Malley grant.

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Environmental Protection Agency. N.D. a "Summary of the Clean Air Act."
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