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Water Flow Connection : Discover Your Relationship with Water through S.T.E.A.M

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Rationale

Water is everywhere in nature yet water is a resource many take for granted.

Technology has been designed and developed to help human connections yet it appears that humanity is less connected than ever before. Technology supports science, yet it also appears that our earth needs support, especially our water as a resource that needs attention. I ask is our technology supporting water resource issue? I wonder what is my relationship or friendship with water? I wonder what relationship are other people having with water? This unit of study invites students to consider their own relationship with water through the lens of the S.T.E.A.M disciplines.

The goal of the unit of study is to combine the domains of Science, Technology, Art, and Math to raise both Science awareness as well as overall mindfulness to Water, Flow, and Connection. The other goal of this unit of study is for the heart of many students and Art viewers to get connected. This S.T..E.A.M. unit allows students the opportunity to make their own relationship or friendship with water through their own personal inquiry. I want students to research water independently, with a group, or a partner, only to find their own personal heart connection or friendship with water, that inspires a powerful water google slide show presentation and amazing water composition.

During this unit of study 5th grade middle school students will look locally at Water, Flow, and make a Connection. Students will consider their many uses of water they have daily, consider the water or sound around them near New Haven, and make a “backyard” personal connection. Students will then do deep dive research and create a google water slide show showcasing their selected topic. 5th grade students will have many differing water directions as well as differing water compositions. Students will explore water and will raise environmental awareness questions through their own personal water discoveries. I am hoping this S.T.E.A.m. Water, Flow, Connection unit creates inspiring water art compositions that are in direct response to the 5th grade students water research and water interests.

Students will try to connect themselves with water and within other communities around them. Students will

use design thinking to create designs for water art compositions. Students will create individual water compositions using varied materials or mixed media. Students will kick off the water unit with writing fun free flowing fast water shape poems. I would like Students to create another shape poem at the end of the unit. I would softly call this the unit pretest and posttest just to see how their shapes or their words may have shifted, grown, evolved, or changed all together by how their research, other student Water google slideshow “share outs” might have impacted their new “post test” shape poems. The goal of this S.T.E.A.M water unit of study is to connect water to the arts and connect students' hearts to water. Students will use the arts as a vehicle to create inquiry for water around us in New Haven Connecticut and beyond. This innovative unit is a S.T.E.A.M. unit of study.

I am hoping students gain a relationship or friendship with water at the end of this compassionate S.T.E.A.M water unit, as they develop their passionate direction and knowledge of water. I want students to consider a list of possible water topics, then self-select a water topic that most interests them to further explore both visually for their mixed media water composition and for their water google slideshow presentation. Students will present orally together, and some selected students will present in front of the 3rd grade as well. Water topic list includes: water contaminants, water flow, drinking water, fractured water systems, alkaline water, hydrogen water, well water, bottled water, hydrogenated water, ionized water, water conservation, water cycle, water treatments, solid/ liquid/ gas forms of water, water-fall, whirlpool, water impacted by climate changes, water impacted by storms, water around coral reefs, or water where sea creatures live and can be impacted by water changes etc.

This unit of study is a catalyst to create student interest in water learning. This unit might also raise other environmental concerns as well. Students can then share about themselves regarding their own relationship with water, how they individually use water and how they can make a possible water commitment or friendship to do one new thing to better locally and to then make water better on this planet earth. Maybe for some students this unit of Water, Flow, and Connection unit will allow students the time and the space for deep mindful water reflection discoveries. This unit of study possibly creates consideration for maybe taking long showers, while for others considering water for entertainment, say swimming, fishing, snorkeling, scuba diving, boating. For other students they can consider how much water they use weekly maybe in the home for boiling water for pasta, watering the lawn, washing the cars, for others it might be about the sea creatures, or eating fish for dinner, etc. I want students to consider their own water inquiry. I wonder how many students toss things outside car windows or dump things down drains? I want students to explore different demographics using google earth and google maps as the technology layer into this S.T.E.A.M Water unit. I want students to encourage or consider another location to compare our water as a resource to somewhere else. I want students to explore all the possible water directions: hydrogen water, alkaline water, water contaminants, water dangers, riptides, water erosion, waterborne diseases and illnesses, water PH, water cycles, and more.

At the completion of the Water, Flow, Connection S.T.E.A.M. unit of study, students will share their google slide shows, and share their art creations. Students will experience design thinking when using critical thinking skills during both the art process and google technology slide show. I want line, shape, color as well as value and tone to be woven into students realistic or abstract water compositions. Students will share to peers their water knowledge in an informal class critique. This share will be good practice for public speaking and sharing their own water passions that they gained from the Water, Flow, and Connection unit of study.

Students will deepen their awareness of both water, flow, and connection.

Students will dive into better understandings of their local waterways, while learning about water elsewhere in the world and making connections to themselves and water spaces. Students will use the arts to make friendly connections, to raise awareness to others on our water as a resource when artwork is completed. Students will use technology, art, math, to learn about water, flow, connection or science concepts pertaining to water.

The link below is the shared google slideshow that hopefully will be copied and shared to students as well as other educators in years to come for more interior and maybe even inspire other interior water awareness art or exterior water awareness environmental art creations:

<https://docs.google.com/presentation/d/1WJOtkVsDiBX3UkUGFROf-Cf9nrG28sh7NM6krIF6Ayk/edit#slide=id.p>

This unit of study is relevant to the Art teaching practices especially for those art teachers who use art as a vehicle to learning other domains. Knowledge is power. This unit is designed to inspire internal water interest and have students gain passion within. The goal is to create internally desires for environmental learning, raise awareness, raise concerns and raise student humanity since they are self-selecting their own area of water focus. Often when knowledge connects to the heart center or soul, concrete learning can occur.

Lastly, when considering the art standards below this unit of study connects with many state of CT art standards

2. Visual Arts: Elements and Principles: Students will understand and apply elements and organizational principles of art.

2.1. Students identify the different ways visual characteristics are used to convey ideas.

2.2. Students describe how different expressive features, and ways of organizing them, cause different responses.

2.3. Students use the elements of art and principles of design to communicate ideas.

3. Visual Arts: Content: Students will consider, select and apply a range of subject matter, symbols and ideas.

3.1. Students discuss a variety of sources for art content.

4.3. Students create artwork that demonstrates understanding of how history (current events) or culture can influence visual art.

To what extent does the unit reflect the development of the student growth? Students who learn about their local water sources and how water flows, and how it is treated and distributed can develop a deeper understanding of the value of water. Water as a natural resource. This unit of study helps to shape students' development of water responsibility, nature of the resource of water. Students develop an understanding of how water changes from one area to another and how the water is a cycle that can impact community and the environment. Students dive into the place of local water and out of state water as well as the place or space in between growing and stretching their brains on demographics and water references.

The scale of this unit of study is appropriate and feasible with the time frame of this school year as it beautifully aligns with April 19th National Poetry month and Earth day April 22 and also the spring warmer weather to get students outside and consider nature and water. Kick off unit of study in mid- March; by mid-

April, students can be well into water compositions and water google slide share outs roll out end of May into June. Each student gives a 3-5 min water slide show presentation. Great end of year unit plan when it is time to start wrapping up school year. The last few classes are listening to student presentations.

I most love that this unit of study could be the seeds of growing water awareness through S.T.E.A.M. The hope is this shared google document copied to then “flow” onto other teachers to take on making S.T.E.A.M curriculum connections, at various schools, and make various water awareness inspired art as well. Lastly, I love the idea that this S.T.E.A.M unit of study Water, Flow, Connection could be the catalyst of forever heart centered water awareness or mindfulness surrounding water. The goal is to raise awareness of being mindful of water both locally and beyond. The relationship between friends, heart or soul connections, caring is the relationship that we want to inspire students to care about being friendly and kind to their local water.

Just as art is everywhere, water is everywhere and is changing, so the overall goal of this powerful S.T.E.A.M. A water unit is to get students to become better observers and thinkers, as well as to open student minds to possibilities of Science, Technology, Engineering, Art, and Math connections through the consideration of their own relationship or friendship with water. I hope students will come to desire learning when they seek independent knowledge of all the kinds of water in the world. While engaged in critical inquiry, students will come to see how water is a precious resource, one to be seriously respected and considered mindfully. I want students to develop skills in self awareness and students will come to build their self-confidence when identifying water characteristics that they were internally drawn to investigate and research as well as ways others have negatively impacted water and ecosystems to try and stop those bad cycles.

I want my water teacher's google slideshow example to inspire students to do better graphically when they depict the water area of their choosing in an amazing, eye-catching way! I want students to consider font, color, etc. Next, I look forward to students using their hands to create watercolor, pencil, collage, oil pastel, mixed media compositions that depicts the water direction of their choosing. Lastly, if an exterior water awareness project can come from this unit of water study, that would be the cherry on top. Many Schools have dumpsters or electrical boxes or other “eye sores” that are great spots to raise exterior water awareness. I believe both hands-on activities will deepen the meaning for this new obtained water knowledge. In this unit some responsible internet decision making skills will be gained as well. Students will gain some practice in public speaking when sharing water google slideshow. Increased listening skills and self control when respecting other student ideas during class oral presentations will be expanded. Students will have an outcome evaluation or rubric of their water idea creation as well as a personal reflection on water all around us and their google slideshow presentation.

This water flow connection unit will also help middle school students with independent self-motivation, impulse control, self-discipline, time management, organizational skills, peer interactions, and peer communications skills. This unit has an element of teamwork when the students work together to brainstorm possible water ideas and then each student will independently select a direction to research their chosen water direction in one area of focus. Students use social engagement when they “pair share” or “bounce” their ideas together and begin to build peer partner relationships, peer connections, and a flow within the community. After students have selected their water direction to research, students then create a google slideshow and request feedback again from their peers. Lastly students create with watercolor or oil pastel composition and students will again “pair share” their artistic suggestions for student revisions or changes.

On the surface this unit may seem to be solely about art elements, principles, and line creations focused on smudging etc while visually appealing. The reveal is amazing that this art composition is actually inspired by

a deep dive STEAM water flow connection unit! I want students to gain an understanding of how professional artists go about their art creations. Students will see other artists who were “moved” by water landscapes in their professional art works as well.

The water flow unit will hopefully be deeper and richer than any Art unit so far this school year due to the multi-content layering S.T.E.A.M. involvement. The goal of this unit is also to allow academic and artistic independence as well as students being able to utilize previous skills taught during this school year and now independently applying them. I am hoping by having the students take control of their own water learning directions, that the students will be internally driven by their own inspirations as well as take their learning to a more concrete place of gaining forever knowledge. I am hoping for this Water Flow Connection unit *in S.T.E.A.M.* there will be an introspective experience that students remember. This unit will support students into becoming deeper critical thinkers as well as strong observers and more respectful and mindful of water all around them. I want this Water Flow Connection unit to be self guided instruction, thinking, and investigating the learning process to transform student learners.

I wish to review some technology “rules” when searching the internet. I want to remind students that they could accidentally stumble upon inappropriate or “off” topic information and that students are not to be distracted. Students are to redirect themselves or log out and redirect back to appropriate “on” topic water territory.

To inspire art creations I will be providing a list of artists that are associated with water inspiration in their art in case students wish to do a recreation or “in the manner of” that particular artist style: Claude Monet, Hokusai, David Hockney, Georgia O’Keefe, Winslow Homer, Helen Frankenthaler, William Turner, Ansel Adams, Helen Chadwick, Zaria Forman, just a few that I will include to give the students a variety of inspiration.

Each of the above artists use water for varying reasons, for example Zaria Forman deals with a more troubling subject through seascape paintings, her works are often inspired by climate change; while Helen Chadwick is a contemporary British artist works that explore the relationship between the human body and water. I included a few other artists in the teacher google slide show as well.

School Setting

My unit is part of a study of water intended for all grades K-8 Art, at the Worthington Hooker School in New Haven. This is a solid S.T.E.A.M. unit. The seven foundations of STEAM (Science, Technology, Engineering, Art, and Math) include: Observation, Creativity, Innovation, Planning, Revision, Collaboration, and Presentation. This Water Flow Connection unit touches on all seven foundations. I am focusing on one middle school class for this unit and that class will go through all seven foundations. Students will learn about Water as an Artist focused area as well as consider how water is used or needed in Nature, Math, and even Psychology. Students will be flowing through water upward and downward gaining knowledge on the power of water. Students will then see the power of a water and hopefully establish a friendship with water. During the S.T.E.A.M Water unit Art will be showcased that will display all the Water possibilities from all the grade levels. I will be having grade 5 as a focus group.

I want the students to have viewed a variety of water compositions before they select what water direction they choose. For the student who can not pick the direction of their choosing I will be happy to assign a water direction for that student in order to have our final share out be more rich or varied in S.T.E.A.M. directions of water, flow, and connection. Students will have a few days from one art class to the next to explore, peer share, and to select their own water direction. I want the students to tell me orally their proposed plan and

email me as well so I am fully understanding of their independent direction that each student is heading in. I will be teaching approximately 50 plus 5th grade students in the focus group and over 250 students in the other groups experiencing the spring Water Flow Connection unit.

While I will be presenting Water Flow Connection in nature to the entire Worthington Hooker student body in the spring, by March 21, I designed a focus group for this unit of grade 5. I will do a deep dive into water flow connection for this 5th grade group. Then five to seven willing 5th grade students will present their selected water topic and google slide show to the younger 3 grade level classes. This fifth grade age group I see one day a week, with each class being 45 minutes.

The middle school students range in art abilities as well as have different interest areas, so this Water Flow Connection unit will certainly internally motivate each student differently. This S.T.E.A.M. unit is a step into all Worthington Hooker students gaining skills into making connections between Science, Technology, Engineering, Art, and Math. I look forward to seeing the students who might weave in Math and work with the golden ratio or fibonacci cycle into say a wave much like artist Leonardo Da Vinci!

This unit will be taught in the spring after my gaining some student rapport as well as students gaining both some background knowledge in art elements and principles. Students will then apply preexisting art knowledge while making connections all around them. By Spring the students will feel more comfortable with navigating independently around the art studio, for example where the sinks brushes etc are located. The spring is also a time of year that all students have some comfort level with working with many different tools and materials throughout the school year as well as knowing clean up protocols. By spring in any given school year the students can better manage independently working aside peers without projects all being the same. The spring is a great time of year to address water safety and Earth day awareness connected to water.

Introduction

The Worthington Hooker School 5th grade group students will be asked some essential questions throughout the unit of study:

What is our relationship or friendship with water?

What role does persistence play in research, revising, refining, designing, developing, and creating work?

How does collaboratively reflecting on an Artwork help us experience it more completely and deeply?

How does collaboration and brainstorming expand the creative design process?

What conditions, attitudes, and behaviors support creativity and innovative thinking?

How does engaging in creating art enrich people's lives?

How does making art attune people to their surroundings in nature?

How does learning about art (lines) impact how we perceive the world moving forward?

The answers to these essential questions will be discussed at the wrap up time, for a closure to the unit in the focus group. The focus group will be table groups for “pair shares” as well. Students will discuss afterwards with the entire class and then break into smaller groups for deeper peer share table discussions of the water direction they did when considering their independent google slideshow Water Flow Connection directions.

I want grade 5 to think for themselves, work as independently as possible, and become experts of their selected topic. I will kick off the water unit with peer collaborations that will hopefully generate and internally motivate the students for their own selected Water Flow Connection direction. I will also have the students create a fast water collaborative poem. I want students to allow Water Flow and Connections to just occur rather than students feeling uncomfortable with just allowing their first popping thoughts to be written down feely. This soft writing exercise is a soft pretest.

After this brief sharing I will then direct students to the teachers google slideshow which will be located inside the google classroom for easier access. Inside the google classroom students will be able to click a link to my created Google Water Flow Connection Slide Show. This safe organized internet exploration will allow students in grades 5 to determine where they “spy” water in the world and which direction the students are considering. I am super curious to see what direction the students will take. All students at Worthington Hooker School will learn eventually that in the natural world, we find the importance of valuing Water! Some grade 5 students will present their created google slide shows and art compositions to grade 3 classes.

Water Flow Connection Studies Grades PreK-12

I will be teaching K-8th graders a spring water experience. Students' eyes will begin to observe the natural world around them from another perspective, maybe even a turtle or a dolphin's perspective. I will adapt the study of water through art for the K-8th grade students that I teach at the Worthington Hooker School. This unit can be used to teach high school students as well.

Students will see water value in: nature growing say fruit veggies sunflowers, the path of draining water, weather patterns (including rain, flooding, sea levels rising, etc), drinking water, contaminants, water that mollusk shells, the nautilus shell, snail shells, all need water. Students may consider whirlpools, and more. I plan to teach whirlpool inside my google slide show.

Students will all create one water work of art to display on the bulletin walls of the various water possibilities everywhere! Students in all grades will participate in a virtual “sit spot” in the classroom since water is not nearby. I am excited to share “sit spot” as a tool to help students learn to stop and take a pause for either an outdoor experience, or an indoor mindful experience to deepen their focus and observational skills. Students will make connections as well as develop their five sense observational skills during this “sit spot” experience considering water near me or what is their own relationship with water?

Water Flow Connection Study Grades K-1st

K-1st students will begin to gain knowledge that water is a natural resource. Students will create water waves with shaving cream for a sensory experience. Students will use fine motor skills and sensory experience when making shaving cream waves. K-1 will also create water compositions and water dolphin turtle compositions. Water will be introduced to all students by briefly viewing interactive teacher created

Google Slide Show and videos embedded within the Water Flow Connection slideshow. Water picture books will be shown. Students in lower grades will use mixed materials as well to make water creations.

Water Flow Connection Study Grades 2-4

Students in grades 2-4 will view teacher- guided google slideshow to see some teacher-led information on water flow connection to help students easily navigate later on as a sneak peak of Water information. If the students can bring chrome books to class then students will have part of a class to navigate or play with my google slide show in pairs. All internet surfing guidelines will be discussed. The 2nd-4th grade group will have “choice” with pencil, crayon, and water color for their water art composition and or direction as well. Students in grades 2-4 will then select what kind of water composition they are considering. After receiving some language arts and water inspirations, 2-4 grade students will create black out poems, shape poems, or short illustrated water stories. Grades 2-4 will use literacy to connect with water as a kick off and as a recap.

Students will read *I Love you, Blue* by Barroux. *Rainbow Fish and the Big Blue Whale* by Marcus Pfister to gain friendships for underwater sea life. Students will then peer share feelings as to how these two books have anything to with the question What is your relationship or friendship with water. Students will then create an art composition showing water and friendship. The students will have “choice” again as to which materials they want to use. I am going to encourage background ideas and foreground ideas using differing materials. I find 2-4 grade students do even better when they have two assignments going at once. For example creating a detailed sea creature, creating a splash splashy background. Two assignments creating one composition. This allows students to be on task while waiting for something to dry or when stamina or focus becomes a challenge. Students can also reflect on literacy and water again.

Water Study Grades 5-8

This age group contains my focus group. Students will engage in a step by step explanation of the water S.T.E.A.M. unit in my overview section below. The focus group will then be on a deep dive learning experience in water (no pun intended). Students in the 5th grade level will use technology and art to articulate their water flow connection unit both visually with technology and in mixed media. The students in this age group will gain skills socially and emotionally as well with collaborations and technology independence. Students will create water compositions with varied materials. The students in grades 6-8 will be exposed lightly to this unit just as the lower grades. Grades 6-8 will not be creating a slide show unless they wish to for extra credit.

Water Study Grades 9-12

For High School students, this water unit of study would make a great fall opening assignment to immerse students in immediate S.T.E.A.M connections. Beginning the school year with having students work independently to select the direction in water of their choosing. This will enlighten where the students are in their own thinking, learning styles, and how they make connections to water. This unit of study could almost act as a pre-test to gauge you how fast or slow you will have to design other units and this unit will allow you to see who your learners are. After teaching high school students for over five years I know this unit would make a great opening learning opportunity for students in grades 9-12 and a great way for the new teacher to immediately learn about the new class makeup of students. Teachers can take all focused group plans and modify them accordingly. Teachers can make a copy of the teacher water flow connection slide show and then add other items if they wish to elevate the example.

Water Flow Connection Study Grade 5 : Overview for Focus Group

I will use Google classroom as a platform to post my teacher created water slideshow for grade 5 students. I teach this “focus group” 45 minutes a week. This focus group will have more time and be able to go deeper in their thinking and understanding of water. The student google slideshows are a deep dive of water inquiry in a direction of the student’s choice. I will also review all internet surfing guidelines with them since students will be navigating on their own. The Google Slide that I post on google classroom will be given to all 5-8 grade students directly for them to explore.

I will facilitate the grade 5 in the learning process of Google slide options with my slideshow. I will answer any questions on Google slide in order for grade 5 students to design their own slideshow and I will assist them in finding a water topic for them to “teach” or share or orally when each student presents. I will give design instructions on how to insert links, photos, change colors, etc. to make for a visually stronger slideshow. It is important to me that students develop a relationship with water and find a hook or a passion to teach peers. It is also important that students comprehend aesthetics and design to visually “hook” their listeners when they present.

Students will read *Water looking at Art by Grolier Educational* for inspiration to see examples of how artists through the centuries have used water for their artistic compositions in early renaissance art through seventeenth and eighteenth centuries as well as in twentieth century. I want students to consider the various ways artists use water and for students to consider what artistic direction they are going in when designing their own water composition.

After discussing water with all grade levels, the focus group will participate in a lesson on graphic design. During this lesson students will discuss graphic design elements, and principles, lines, shapes, font style, font size, background color, underline links, bold, visually pleasing images, as well as internet concerns or dangers that exist.

Students will pick a direction to follow their own research. Students will create individual three to five minute Google water Slide presentations. I want students to consider the visual presentation and aesthetics when designing their own google slideshows. I want students to gain skills in critical thinking of graphic design, layout, cropping photos, font, and complementary color choices during their edit process as well as font text bold italic and placement of photos, text, and color together. Students will experiment with all the google slideshow toolbars while simultaneously gaining skills in “seeing” water in a different way, seeing water around them in ways they did not before and possibly learning how valuable their own need or friendship is to water. Students will share / email finished google slide shows of their selected water topic.

We will be reviewing elements and principles of art in order to make aesthetically pleasing presentations as well as water compositions. This focus group will be guided in their art techniques. Grades 5th, 6th, 7th, and 8th grade classes will use mixed media. Students will create a water inspired work of art. During student studio work time students will view water inspired TED talks that I will have embedded in the teacher water slide show during our class work time. Students can complete a brief 100 word written assignment for extra credit noting what new knowledge they might have gained from this unit of study or TEDx talks. Students can note anything gained from either their peers, their own research, TED or TEDx talks watched, or from me. Students can write their water thoughts at this time for extra credit. Students can submit as many extra credit written assignments as they wish. Each 100 word is ten points. Students who want a 100 yet feel visual art,

public speaking, or computer design is too challenging this will help shift their perspective so they feel successful and motivated right from the start.

Students will create a title card to their water composition art work as well. I wish for students to become experts in their selected water direction. I want grade five students who feel passionate about their water direction or area that they selected to then “teach” or present their water topic, for the 3rd grade Art classes. I wish for all students to gain “observational water seeing skills” meaning how they are respecting water or making friends with water, being kinder or more aware, considerate to water and so forth. In addition, I want students' writing and technology skills strengthened through this Art water project to advance their tech savvy skills and graphic design skills. I look forward to seeing what the students teach me as they use critical thinking skills, writing communication skills, creativity, and problem solving skills.

Finally we will review the art of public speaking skills including eye contact, poise, not reading out loud the slide content and other public speaking techniques. Students will have water flow connection lens “upgrades”. Lastly, students fill out self evaluation as well as teacher evaluations of the water unit and address why they selected the google slideshow direction that they did. They will be able to reflect on areas they would have done differently as well.

Water, Flow, Connection in S.T.E.A.M.

Inside the Teacher Google Slideshow, the students will learn how Water connects with the S.T.E.A.M subjects. I want students to keep asking questions about water and their own relationship or connection or friendship to water. I want students to consider what the possible water issues are found in nature? I want kids to consider what being friends with anyone actually means and how can anyone be friends with water.

Science Water

Water (H₂O) is a transparent fluid or liquid which forms the world’s streams, lakes, oceans, and rain and is a major constituent of the fluids of organisms. Water as a chemical compound: a water molecule contains one oxygen and two hydrogen atoms that are connected by covalent bonds. Water is a liquid at room temperature and pressure, and because it readily dissolves many solids it is called a solvent. Having such a good solvent is critical for the functions of life.

Drinking tap water, as opposed to bottle water: Drinking water must be clean enough to drink, while pollution is seeping into drinking water. To mitigate such pollution, unnecessary plastic waste can be avoided, and transport related emissions of air pollutants can be decreased. Anthropogenic carbon dioxide emissions also work their way into the oceans, making them slightly more acidic.

Water systems, reliable treatment equipment systems: There are three legal distinctions between the types of public water systems: community, non-transient non community, and transient. The type of water system is based on how often people consume water.

Water Hurricanes and typhoons are the same weather phenomenon: tropical cyclones. A tropical cyclone is a generic term used by meteorologists to describe a rotating, organized system of clouds and thunderstorms that originates over tropical or subtropical waters and has closed, low-level circulation.

Technology Water

Advanced water sanitation systems: - Students will learn the value of technology to keep our water safe. Students might select to research one of the following technologies: Solar powered water filtration, desalination systems, Nanotechnology, Bioaugmentation for wastewater treatment, Acoustic Nanotube Tech, Photocatalytic Water Purification, and Automatic Variable Filtration, - Students will learn the value of technology and how it supports our water safety.

Engineering Water

Students will gain knowledge on what engineering divisions are set up like D.E.E.P to protect water and what engineering sanitation systems exist.

Students might also choose to learn that engineered water refers to a relatively newer technology, where the makeup of water is altered based on science to produce an effective cleaning agent. Several types of water fall into this category including electrolyzed water, aqueous ozone, and steam vapor which can all be effective.

Art Water

In Vincent Van Gogh's *The Starry Night*, the water catches one's eye; if you look at the painting you see the shadows from all the light reflecting on the water.

Katsushika Hokusai's *Great Wave* has been a symbol of not just tsunamis, but hurricanes and plane crashes into the sea, all depicting water.

Georges Seurat painted *A Sunday Afternoon on the Island of La Grande Jatte* a leading example of pointillist technique featuring water as well as *Bathers at Asnieres* where the subjects are along side a river.

Students will be encouraged to consider these types of artwork as well as others that include water as part of the subject matter which can be used as an inspiration when they design their own water composition art piece. Students are encouraged to find art that shows water

Math Water

Math concepts like estimation, dimension analysis, volume, and area can help students understand water discharge rates, runoff volumes, and what it means for it to rain one inch. Students will learn how Math helps us better understand what the ocean is doing below the surface to know water flow, water wave scattering, fronts, currents, and more.

Water structure in a golden ratio the fibonacci sequence of 1,2,3,5,8,13,21,34,55,89,144..... this links to the M in S.T.E.A.M. The Fibonacci sequence is generated by each number in the sequence as the sum of the previous two numbers. Interesting this math pattern in nature the pentagonal dodecahedra is a Platonic solid based on the golden ratio, it has 12 pentagon faces, 20 vertices and 30 edges. Water clusters structured as pentagonal dodecahedra consist of 20 water molecules (H₂O) connected by hydrogen bonds. This cage structure is one of the building blocks of SI clathrate hydrates, crystalline ice-like solids in which gases (such as methane) and other molecules are trapped. Methane clathrate hydrates are found naturally in deep oceans and permafrost regions of the earth, raising fears that global warming will release unprecedented amounts of the potent greenhouse gas methane into the atmosphere.

Instructional Strategies and Lesson Plans

Each lesson is designed for a forty five minute studio art class. For some lessons, you may find forty five minutes is not enough time due to student engagement or clean up delays. For other lessons, you might find your students ready to move on; see lesson seven, which includes multiple back-up plans with language arts assignments, black-out poem, etc.

Lesson one

Students are asked How do you see your own connection to water?

We have an in class discussion reviewing what students together found about their own relationship to water. I then want students to think of artists relationship with water? Students will then view teacher Water, Flow, Connection google slideshow that is found on google classroom. Eventually I want students to find their own direction of water interest and for students to see how art through the centuries contains many paintings featuring water. Students can select to do an “ in the manner of” art composition, inspired by a famous artist. Here are a few paintings imbedded into google slide show to spark some interest. Vermeer painting from about 1660 *View of Delft* show two tiny figures across a broad river. Then in the nineteenth Century art ideas began to shift the traditional attitude that a landscape without people was not a worthy subject for artists. Van Gogh *Drawbridge near Arles* is an example of how technology impacted the water. *Bathers at Asnières* by George Seurat 1860's Can you see why this picture is so unusual? It is made up of millions of different- colored dots. I want to introduce different styles to support kids in being inspired by the directions artists go. This first lesson is trying to hook students so they are internally motivated to do water research for homework. Students need to email me their water topic before next class.

Lesson two

Students will learn how to make a google slideshow (inserts, colors, consider design layout, etc.). After teacher recap and share students will peer share 5-10 minutes about their selected water topics they are considering. Does their water topic connect to in Science, Technology, Engineering, Art, or Math? Students will research their water topic online and begin creating Google Slide shows applying their own research findings. Students in small groups will discuss their own water findings for their google slideshow. Students will use their self direction for their own created slideshow. During the final 10 minutes students will peer share again what they have done and share their brainstormed ideas of what they are considering for water compositions.

Lesson three

Students will participate in a “sit spot” activity; this experience will be a final attempt to assist any student who is still struggling to “spy” their own water direction or water composition idea to independently work on. I will create a “sit spot” virtual experience for all students and especially to support those learners who are now falling behind, stuck, or were absent. The mindful practice of observation can relax the brain to tap into the creative zone. I want students to increase observational skills during “sit spot” as well as inspire the students who have not found a water direction yet. I will ask students to close their eyes. I want students to not consider anything except just being present here in the room. I will then ask students to pretend we are headed to the ocean, I will ask them to think about the color blue, do they hear any noises, do they taste

anything, can they feel anything on their skin when at the beach. I want students to consider whether they are excited for a water visit, or whether another emotion comes up. I will then play the videos and ask them to write creatively a stream of consciousness or a poem or rambling thoughts. I want students to write what comes to mind while watching or they can draw if words do not come to mind. This is a 10 minute activity or so. Afterwards I will remind students to put names on the papers and collect the papers. Now I want students to carry on with google slide show or start sketch of their water composition or start water composition.

Students also need to be thinking about what type of water art composition the student plans to create? What artistic direction is the student selecting? What art supplies will the student use? Students that are ready can gather things and engage in art making, students can discuss collaboratively and independently while creating their google slide shows. Students need to share google link with teacher by the end of class as a viewer not editor so I can track progress.

Lesson four

Students use critical thinking skills to both design the water google slide show. Students also use critical thinking skills to plan what they will design and create for their water composition. Students are finding solutions to an artistic problem while finding out about water, making a connection as to what they are passionate about. Students will be able to apply their gained knowledge of water when creating their google slideshow. Students will apply their knowledge of line, shape, and color so google slides are visually pleasing to the eye. I want students to gain an understanding that strong aesthetics creates interest and helps to keep the attention and focus for the viewer. Students will consider the elements and principles of Art.

Slide shows can be done at home for homework as well as in class if they need an art creation break they can keep going back into water google slide show. Students create their own artistic google slideshow. I want the focus group of 5 grade students to consider graphic design tips, measurement, spacing, font sizes, having things aligned properly in google slideshow. I want students to be aware of alignment. Alignment ensures an ordered appearance for graphically more pleasing designs. Center, right, or left-aligned text is the most common form of alignment, but you can also go for asymmetrical balance as well. Students need to be mindful of line, shape, and color. Text size and style.

Lesson five

Students review elements of design as the fundamental aspects of any visual design.

Students will review the elements and principles of art, specifically line, balance, rhythm, pattern, emphasis, contrast, unity and movement with their water compositions. Students will peer share 5 minutes to see if anyone suggests design tips. Students will use rest of time to work and clean up art.

Lesson six

Students review composition principles of art balance, rhythm, pattern, emphasis, contrast, unity and movement. Students fall in love with working independently both on water composition and on water google slideshow. Students will participate in creative writings, poetry, blackout poems and spiral shape poems as a pause in project or in case some students finish anything early.

Lesson seven

Student peer “share outs” with peer critique to see what needs work. Finishing touches are to be done both

with google slide and with water compositions. Students will participate in creative writings, poetry, blackout poems and spiral shape poems as a pause project or in case some students finish anything early. Students will present Google Slideshows next class.

Students grade themselves using a rubric and they decide if they need to edit/revise their work.

Unit Rubric Summative Assessment: Rubric of water. Closure, feedback, display student work, google slide oral presentations, public speaking.

Other Possible Differentiation/Modification: Flexibility with timelines, provide artistic choices, utilize google slide show and peer shares/collaborations. Provide supply modifications.

Lesson eight

Students will begin presenting 3-5 minute water presentations.

Students will fill out Water Flow Connection form for each presenter and give feedback as to student “take aways” after listening to the presenters.

Students will be kind active listeners. I am also requesting students raise smart questions to the presenter. Students will be graded on this form as part of grade and students can lose points for not giving full attention to fellow students. Students will share, each share is like a mini wrap up or closure to this unit. For a final check out, *I would love for students to use the first sheet what is your relationship to water ?* to try again, new date, I want to see the comparisons of their thoughts and ideas as they have now been immersed in the water S.T.E.A.M unit..

Formative Assessments:

It is very important when assessing the students that the whole child is considered, not just the final water composition or final product or final google slideshow. The entire art process is extremely valued in this unit of study for grading. The teacher observes all the students throughout all seven plus weekly lessons. The teacher can assess the individual with the support in weekly class work, clean up, sketch planning, handing in homework on time, completing poem. I encourage student class participation, student responsibility, student clean up, and student individual oral assessments be considered in grading. It is very important to listen to student responses to water, especially after viewing their google slideshows. It is important to see the student responses to water compositions not just grade the final projects in order for many students to receive a good final grade. Grading components include: brainstorming topic, creating slide show while considering elements of graphic design, creating water compositions considering elements and principals of art, weekly class participation, weekly cleanup, and written extra credits. The “pretest” and “post test” is when students complete final check out did their thoughts grow and evolve after being influenced by all their peers.

Learning Objectives

Students will gain knowledge of content, methods, practices and life skills:

- Students will have an increased awareness of the water all around us.
- Students will see how water, flow, connections exist.
- Students will collaborate and generate ideas of what water topics.
- Students will peer share and have student discourse when selecting a water direction that they are considering.
- Students will gain water vocabulary as well as water knowledge.
- Students will see how water is used to inspire artists.
- Through art-making, artists make meaning by investigating and developing awareness of perceptions, knowledge, experiences.
- Students will demonstrate responding skills by creating water compositions.
- Students will provide authentic evidence about their selected water topic.
- Students will be able to identify more water connections to themselves than originally thought.
- Students will be able to distinguish between different types of water in nature.
- Students will gain a new friendship or relationship with water.
- Creativity and innovative thinking are essential life skills that can be developed.
- Artists and designers develop excellence through research, practice, constructive critique, reflecting on, revising, refining work over time, determination, and oral critiques.
- Individual aesthetic and empathetic awareness will be developed through gaining a new friendship with water.
- Having engagement with art that can lead to better understandings and appreciation of self, others, the natural world, and constructed environments.
- Students will be able to integrate the elements and principal of art in water visual compositions.
- Students learn or navigate online themselves through their own learning of water.
- Students gain critical thinking skills in creating google slide presentations.
- Students identify and demonstrate diverse methods of artistic investigation to choose an approach for beginning water work of art.
- Students engage collaboratively in creating an art-making google slide show experience in response to an artistic problem --finding a water topic to explore.

Conclusion

The fifth grade focus age group will be taking a deep dive into various water topics. This process will give them great comprehension of how artists brainstorm, research, sketch, edit ideas, and design in order to participate in the art process. Students will see first hand that art making is not just placing lines, colors, shapes, and art materials together; it is a deep reflection process and response process to something else. Students will see that their water composition is connecting to something deeper than what is present on the page. This S.T.E.A.M water art unit is an introductory art unit revealing the design art process so students will see through their own trial and errors that rarely is art created for no intended purpose.

I want to close this unit with friendship. I want students to gain a relationship or friendship with water and I want to students to be safe around the water in the summer. In 2017 my son's 10-year-old friend had an incident with a culvert drain due to a whirlpool. I want students to be mindful that in the summer we all need to be very wise around water because secret whirlpools can pop up out of the blue especially summer storms when undertow can exist too. I want students to feel the beauty in water everywhere while also knowing to be safe around water as well.

Appendix on Implementing District Standards and State Art Standards

Science:

MS-ESS2-4

The Water cycle, focusing on how water changes state as it moves through the hydrologic cycle.

This standard also includes the roles of water in Earth's surface processes, such as evaporation, condensation, and precipitation.

Technology:

1.4 Innovative Designer

Students use a variety of technologies within a design process to identify and solve problems by creating new, useful or imaginative solutions

1.6 Creative Communicator

Students communicate clearly and express themselves creatively for a variety of purposes using the platforms, tools, styles, formats and digital media appropriate to their goals.

Art:

VA: Cr1 Generate and conceptualize artistic ideas and work.

VA:Cr1.1.2 Brainstorm collaboratively multiple approaches to an art or design problem.

VA:Cr3.1.2 Discuss and reflect with peers about choices made in creating artwork.

VACr3 Refine and Complete artistic work

VA:Re7.1.2 Perceive and describe aesthetic characteristics of one's natural world and constructed environments.

VA:Cr1.1.4a Students brainstorm multiple approaches or directions to a creative slideshow art or design problem-

VA:Cr1.1.3a Students Elaborate on an imaginative idea.

VA:Cr1.2.2a Students make art or design with various materials and tools to explore personal interests, questions, and curiosity with spirals-

VA:Cr2.3.7a Students apply visual organizational strategies to design and produce a work of art, design, or media that clearly communicates information or ideas-

VA:Cr3.1.7a Students participate in a brief oral critique as a verbal artist statement “walking” me through their research and design art process. Reflect on and explain important information about personal artwork in an artist statement or another format.

VA:Cr2.1.8a Students demonstrate willingness to experiment, innovate, and take risks to pursue ideas, forms, and meanings that emerge in the process of art making or designing-

Math:

CCSS.MATH.CONTENT.6.EE.B.7

Solve real-world and mathematical problems by writing and solving equations of the form $x + p = q$ and $px = q$ for cases in which p , q and x are all nonnegative rational numbers. (Fibonacci spiral and golden ratio spiral)

CCSS.MATH.CONTENT.6.EE.B.6

Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.

Resources

Videos, handouts, teacher example Water, Flow, Connection slideshow, Websites:

Vermeer Delft = <https://www.youtube.com/watch?v=p6BIRUCXNho>

Vincent Van Gogh = <https://www.youtube.com/watch?v=8FnO4JsEsT0>

George Seurat = <https://www.youtube.com/watch?v=IFE42SUGXVo>

Katsushika Hokusai = <https://www.youtube.com/watch?v=8z9zRbwh43I>

Leonardo Da Vinci = <https://www.youtube.com/watch?v=jxKYFBtdsqU>

Art Water themes = <https://www.pinterest.com/sheennaing/water-themes/>

Rainbow Fish and the Big Blue Whale by Marcus Pfister =

<https://www.youtube.com/watch?v=yWf4cQoIk0>

How to draw a fibonacci spiral=

https://www.google.com/search?q=how+to+draw+a+spiral+composition&aq=chrome..69i57j69i64l2.11554j0j7&sourceid=chrome&ie=UTF-8&safe=active&ssui=on#kpvalbx=__FGzYtyIKcLYptQP8aW2qAI42

What is ionized water = https://www.youtube.com/watch?v=F58aVXE_y-E

How to Marble paint = <https://www.youtube.com/watch?v=dS08mfUtr4g>

How to use oil pastels = <https://www.youtube.com/watch?v=jm6wo-8rJD0>

Sit spot activity = <https://www.youtube.com/watch?v=DIL4wxaEiPs>

Water waves crashing on shore= <https://www.youtube.com/watch?v=NaMxnUS4srA>

Water sounds= <https://www.youtube.com/watch?v=8ssP08D2fK0>

8 basic design principles = <https://www.youtube.com/watch?v=rI0cHn1F9B0>

= <https://www.adobe.com/express/learn/blog/8-basic-design-principles-to-help-you-create-better-graphics>

The Math of water = <https://www.youtube.com/watch?v=NwePqR-4-g8>

Using Technologies to create water = <https://www.youtube.com/watch?v=Sy-qYky28U4>

7 technologies to end the clean water crisis =

<https://www.wateronline.com/doc/how-water-sanitation-technology-brings-people-clean-water-efficiently-0001>

Water,Flow, Connection Form for presentations

https://docs.google.com/document/d/13mIUSeYN9-czc1UAroSt_WnTYpo3mbhn9J0EozDRQz4/edit

TEDX TALKS:

https://www.ted.com/talks/balsher_singh_sidhu_are_we_running_out_of_clean_water?subtitle=en&trigger=0s

https://www.ted.com/talks/francis_de_los_reyes_how_the_water_you_flush_becomes_the_water_you_drink?subtitle=en&trigger=0s

Teacher create google slide show on Water, Flow, Connection

https://docs.google.com/presentation/d/1WJOtkVsDiBX3UkUGFROf-Cf9nrG28sh7NM6krIF6Axk/edit#slide=id.g2e9192d7ae0_0_1

Readings for students and teachers

Pfister, Marcus. *Rainbow Fish and the BigBlue Whale : North-South Books*. New York: London, 1998. When a big blue whale comes to live near their reef, there is a misunderstanding between him and Rainbow Fish and his friends that leaves everyone very unhappy and hungry.

Barroux. *I Love You, Blue : Great Britain : Otter-Barry Books*, 2022.

Children's picture book about respecting water and caring about whales.

Garre, Sarah and Huysmans, Marijke. *The Wonderful World of Water*. New York: Munich: London Prestel Publishing, 2021. Passionate about the role of water on our planet and how we can manage it better. Fascinated by the water that is in the ground beneath our feet.

Pipe, Jim. *Why Does Ice Melt?: Copper Beech Books*. Brookfield, Connecticut Aladdin Books, 2002 . Discover why ice melts in a fun childlike way.

Stow, Dorrik. *Water : Eyewitness Books* . New York: London: Melbourne: Munich : Delhi Dorling Kindersley Publishing, 2009. This book looks at the amazing world of water - a substance that covers most of our planet, is essential for all forms of life, and affects human society in countless amazing ways.

Cook, Tim. *Water : Looking at Art*. Grolier Educational: Danbury, Connecticut: 1996.

This book goes through early and Renaissance Art, then seventeenth and eighteenth Centuries , Nineteenth Century and Twentieth Century unveiling the exquisite beauty created by many artists through the years as water as the subject matter.

Milner, Charolette. *The Sea Book : Meet the Marvelous Creatures Living in our Oceans*.

New York:DK Publishing, 2019. Brings important information about who lives in the water.

Tarshis, Lauren. *Scholastic: I Survived Hurricane Katrina, 2005*. London: New York: Toronto: Scholastic Inc., 2011. His whole World is underwater, Can he survive the storm of the century-alone?

Tarshis, Lauren. *Scholastic: I Survived The Japanese Tsunami, 2011*. London: New York: Toronto: Scholastic Inc., 2013. Visiting his father's hometown in Japan four months after his death would be hard enough for Ben, but one morning turns pain into fear.

Teaching Materials / Worksheets / Handouts / Vocabulary

Vocabulary

Eye spy - I spy with my little eye something that is a water topic that

Sit spot -A sit spot is simply a favorite place in nature (or looking out a window at nature) that is visited regularly to cultivate awareness, expand senses and study patterns of local plants, birds, trees, and animals. The practice supports mindfulness, builds routine and increases

Elements of Art- shape, line, space, texture, form, color, and value

Principles of Art- balance, unity, repetition, perspective, proportion, harmony, emphasis, and rhythm/movement.

Fibonacci wave spiral- a set of numbers that starts with a one or a zero, followed by a one, and proceeds based on the rule that each number

WHAT IS YOUR RELATIONSHIP OR FRIENDSHIP TO WATER????

DATE

NAME

WHAT IS YOUR RELATIONSHIP or FRIENDSHIP to Water ?

NAME _____

WATER FLOW CONNECTION FORM

Below create word, doodles, or sentences as your "take aways" from water presentations: please be creative in your below responses.

- | | | |
|-----|-----|-----|
| 1. | 13. | 25. |
| 2. | 14. | 26. |
| 3. | 15. | 27. |
| 4. | 16. | |
| 5. | 17. | |
| 6. | 18. | |
| 7. | 19. | |
| 8. | 20. | |
| 9. | 21. | |
| 10. | 22. | |
| 11. | 23. | |
| 12. | 24. | |



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