

Creative Lessons To Open Classrooms & Minds To The World.



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Sixth Grade Lesson Plan

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LESSON PLAN TITLE

The Value of Water: Use it, Abuse it, and Lose it

DESIGNERS

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SUMMARY AND RATIONALE

Since ancient times water has been one of the most important substances on earth and needed by both animals, marine life, humans, and plants. Students will investigate the various uses of water including domestic, agricultural, industrial, recreation and hydropower. Students will examine the impact of human reliance on water and necessity of protecting water on a global level.

GRADE

6th

TIME FRAME

Four 50-minute classes

SUBJECTS

Social Studies
(Science, Reading / Language Arts, and Math)

ACCOMMODATIONS & MODIFICATIONS

Take into consideration that ESOL (English to Speakers of Other Languages) & ESE (Exceptional) students will need modifications to the lesson (chunking, teacher-student assistance, peer partnering, accommodations, extended time, for ESE students following their IEP, etc.).

OVERVIEW

- Day 1 - Review of historic and modern use and abuse of water systems
- Day 2 - Small and Large group Discussion: Compare and evaluate
- Day 3 - Local expert visits class to discuss local use, management of water resources, and conservation efforts (prevention, intervention, and damage control)
- Day 4 - Presentations on water problems and solutions to promote active civic involvement

INSTRUCTIONAL GOAL

INTERCULTURAL COMPETENCY

- **Intrapersonal Skills:** The ability to recognize and weigh diverse cultural perspectives on the use of water resources.

KNOWLEDGE & SKILLS

- **Politics & Government:** Contemporary global challenges in human-environmental interaction.
- **Culture, religion, and history and geography -**
 - › Map ancient river civilizations.
 - › Understand the historic uses and abuses of bodies of water.

WORK & MIND HABITS

- Identify different cultural perspectives through which to think about problems.
- Carry out research projects independently identifying current and global challenges related to water and possible solutions.

STANDARDS

UN SDG 11: SUSTAINABLE CITIES & COMMUNITIES

- 11.4 - Strengthen efforts to protect and safeguard the world's cultural and natural heritage
- 11.5 - By 2030, significantly reduce the number of deaths and the number of people affected and substantially decrease the direct economic losses relative to global gross domestic product caused by disasters, including water-related disasters, with a focus on protecting the poor and people in vulnerable situations
- 11.6 - By 2030, reduce the adverse per capita environmental impact of cities, including by paying special attention to air quality and municipal and other waste management.

UN SDG 11: SUSTAINABLE CITIES & COMMUNITIES

- #3 - Good Health & Well-being
- #6 - Clean Water & Sanitation

UNDERSTANDING

- Humans both past and present have relied on rivers and other bodies of water.
- Humans impact rivers and other bodies of water.
- Through sustainable management, the use of rivers and other bodies of water can continue to support human life and all living things into the future.

ESSENTIAL QUESTIONS

- How have rivers or bodies of water contributed to the development of human settlement?
- How have humans negatively impacted bodies of water?
- How do humans positively impact bodies of water?
- How can bodies of water be protected for use today and in the future?
- Why are rivers or bodies of water important to your community?

STUDENT LEARNING OBJECTIVES

COGNITIVE LEARNING OBJECTIVES

- The Learner is able to evaluate and compare the sustainability of their and other settlements' systems in meeting their needs, particularly in the areas of food, energy, transport, water, safety, waste treatment, inclusion and accessibility, education, integration of green spaces and disaster risk reduction.
- The learner understands the historical reasons for settlement patterns and while respecting cultural heritage, understands the need to find compromises to develop improved sustainable systems.

SOCIO-EMOTIONAL LEARNING OBJECTIVES

- The Learner is able to connect with and help community groups locally and online in developing a sustainable future vision of their community.
- The Learner is able to contextualize their needs within the needs of the greater surrounding ecosystems, both locally and globally, for more sustainable human settlements.

BEHAVIORAL LEARNING OBJECTIVES

- The Learner is able to speak against/for and to organize their voice against/for decisions made for their community.

ASSESSMENT

FORMATIVE ASSESSMENTS

- Interactive class river/Post-it activity
- Ancient river civilization blank map
- Threats to Rivers research
- Guest speaker questions and reflection

SUMMATIVE ASSESSMENTS

- Presentation
- Flipgrid reflection

SEQUENCE OF ACTIVITIES

OPENER & DAY 1 ACTIVITY



OBJECTIVE

Students will examine historic and contemporary uses and abuses of water around the world. Students will determine actions that they can take to preserve water sources.

OPENER

- View YouTube video: Colorado River - I am Red https://www.youtube.com/watch?time_continue=30&v=mqYcC7jEe44
- Randomly group students into threes or fours. Give each group blue and red Post-it notes.
- Inform students that blue and red Post-it notes will be used to communicate ways that rivers are used (blue Post-it tabs) and abused (red Post-it tabs.) The purpose of the red Post-it notes is to draw attention to the toxic or damaging nature of the abuse.
- Each Post-it note will be used to communicate one idea.
- As students view the video, they record on Post-it notes all the ways they saw or heard that humans use (blue) or abuse (red) the Colorado River.
- When they are finished viewing the video, students will compare their sticky tabs looking for similarities and trends. Students will determine 3-5 strong examples of uses and 3-5 strong examples of abuses. One person from each table group will read the examples out loud to the class as they place the Post-it tabs on the 'river' hanging on the wall.



SUPPLIES

- Black permanent markers
- Blue, red, yellow square Post-It notes (cut in half to conserve)
- Large blue paper cut into the shape of a river taped on the wall or board.
- Computers (one for each student)
- Earphones

ACTIVITY PART 1: ANCIENT RIVER CIVILIZATIONS

- Inform students that like the Colorado River today, rivers in ancient times were important to the societies they supported. Review the rivers that were important to early river civilizations.
- Display Early River Civilizations map on the SmartBoard.
- Ask: "What rivers do you recognize?"
- Ask: "How did people in ancient civilizations use the rivers?" (Possible answers include: transportation, religious ritual, trade, agriculture, habitat for plants/animals used by humans, mud for architecture, fresh water for drinking and washing) "How did ancient people abuse their rivers?" (Ideas might include over irrigation/salinization, damming of rivers, overuse of water.)
- Students are to use prior knowledge and record on the blue and red Post-it notes; all the ways ancient people used and abused the rivers they lived along.
- Students will then compare their Post-it notes as a group, looking for trends in ideas. They will decide on 3-5 strong examples of uses and 3-5 strong examples of abuses. One student from the group will read the "abuse" Post-it notes to the class as they place them on the river. Another student from the group will read the "uses" Post-it notes to the class as they place them on the river.

ACTIVITY PART 2: USE OF BODIES OF WATER TODAY

- Say: “*Today, communities depend on water from all kinds of sources including rivers, lakes, reservoirs, aquifers, inland seas, and the ocean.*”
- Ask: “*How do people today use rivers or other bodies of water?*”
- Students should reflect individually on the question. They should record all ideas on blue Post-It notes. These ideas should not include anything that has already been shared. These should be in addition to how ancient civilizations use rivers. (Answers may include: hydroelectricity, cooling power plants, salt production, mining, recreation, sanitation, fountains, firefighting, manufacturing, toilets, pools)
- Students should compare their ideas as a group looking for trends in answers and determine 3-5 strong examples. These examples will be read out loud by a student in the group as the Post-it tab is placed on the river.
- Collectively discuss how rivers or bodies of water are used or abused in your local area. Every time a student suggests an idea, have them write it on the respective colored Post-it note, and put it on the river on the board.
 1. Discussion Question Prompt: How are rivers or bodies of water used in our local community?
 2. Discussion Question Prompt: How are rivers or bodies of water abused in our local community?
 3. Discussion Question Prompt: How are local rivers or bodies in our community protected?
 4. Discussion Question Prompt: Why is it important to protect our local rivers or bodies of water?

ACTIVITY PART 3: ABUSE OF BODIES OF WATER TODAY

⌚ 10 minutes

- Students use the websites provided to explore more ways that humans use and abuse rivers today. Students will each need a laptop and earphones.
- Youtube: Sacred but polluted (Ganges)
https://youtu.be/MUOnIFZ__6E
- The Guardian: Threatened Rivers of the World
<https://www.theguardian.com/sustainable-business/gallery/2016/sep/22/worlds-threatened-rivers-pollution-industry-agriculture-in-pictures>
- Smithsonian: Exploring the World’s Most Imperiled Rivers
<https://www.smithsonianmag.com/travel/exploring-the-worlds-most-imperiled-rivers-47048630/>
- As they find something to add to the class river, they should use either the Post-it notes, or blue and red permanent markers. Writing with permanent markers on the class river itself will get kids up for longer and will encourage them to pause at the river and read some of the other ideas. It will also help you conserve Post-it notes. The teacher will also be able to monitor the progress of students during this independent work as he/she will be able to distinguish between information that was contributed by the individual and the group.

CONCLUSIONS: TAKING ACTION

Display the images from World’s Watershed mapped in detail and remind students that even if we don’t live directly near rivers, each of us use and affect them.

Students are to go to the website 50 Ways to Save Your River! and read through the list, identifying one action they could take to reduce the abuse on local bodies of water. Students are to record this item on the yellow Post It note and put it on the class river. These Post It notes are to represent the ‘boats’ that clean up the poison of the river.

DAY 2 ACTIVITY - GUEST SPEAKER

OBJECTIVE

Students will develop questions and interview a guest speaker from their local water management, including uses and abuses. Students will devise a plan to remedy any issues their town has regarding water use and management

KEY TOPICS SUGGESTED FOR PRESENTATION

- Community water needs and use
- Threats to the water resources
- Management of the water sources

POSSIBLE QUESTIONS FOR GUEST SPEAKER

- Is our town water safe to consume?
- How much water waste do we generate as a town?
- What steps can be taken to keep our water clean?
- How do the factories in our town use and protect our water?
- Are there problems with our water system that should be addressed?

PRESENTATION WRAP-UP

1. Have students discuss and/or devise a plan to remedy any issues their town has regarding water use and management. Brainstorm and discuss challenges or obstacles for the town to overcome.
2. And/or have students circle back to their Rivers from Day 1 and add anything after the expert presentation.

DAY 3 ACTIVITY - DISCUSSION & RESEARCH

OBJECTIVE

Students will discuss, reflect, and research local, national, or international water management resulting in a presentation on water problems and solutions.

PART 1- WATER MANAGEMENT CLASS DISCUSSION

Students will engage in a class discussion, reflecting on what they learned from the guest speaker. Suggested Discussion Questions:

- Were you surprised about the water use in your community?
- How does the community dispose of their waste?
- “Where does our community get its fresh water?”

- “How does our community use bodies of water?”
- “Will water management by the local community be enough to sustain water resources and human development?”
- “Who should be responsible for water management?”
- “How did/does the indigenous people who live/lived in this area use bodies of water?”
- What steps can be taken globally to ensure water use and management is sustainable for all future generations?

PART 2- WATER PROBLEMS & SOLUTIONS PRESENTATION RESEARCH

Students choose a water related topic, selecting their preference of presentation (individual, pairs, triad, quad), and demonstrate their creativity by creating an informative video, oral presentation, PowerPoint, poster board, dramatization, artwork, skit, rap or poem.

Students choose from a Choice Board of Multiple Intelligences on how to create a presentation for other students within their school community explaining problems and solutions to water management.







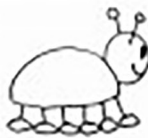

The presentation must include the following information:

- Use of water systems
- Abuse/potential threats or loss of the world’s water system
- Management of water systems/solutions to water system problems

Rubric on the next page to be used with oral presentations including: organization, subject knowledge, graphics, mechanics, eye contact, articulation

Suggestions: Waterborne diseases, pollution in the drinking water in Flint, Michigan (national) and in Jakarta, Indonesia (International), Red Tides that kill marine life, toxic green algae, hydroponics, aquaculture, aeroponics

CHOICE BOARD FOR MULTIPLE INTELLIGENCES

<p>Verbal/Linguistic</p> <ul style="list-style-type: none"> • Write instructions • Keep a personal journal • Create a poem • Create TV ads • Read stories to others • Retell in your own words • Teach concept mapping • Create crossword puzzle 	<p>Logical/Mathematical</p> <ul style="list-style-type: none"> • Create a time line • Compare/contrast ideas • Create an outline for a story • Design a map • Decipher codes • Create patterns • Design a game to show... 	<p>Visual/Spatial</p> <ul style="list-style-type: none"> • Create a poster • Draw a map • Create visual diagrams • Draw from different perspectives • Create a comic strip • Graph results of a survey 
<p>Interpersonal</p> <ul style="list-style-type: none"> • Tell stories • Teach a cooperative game • Role play a situation • Discuss and come to a conclusion • Survey or interview others 	<p>Free Choice</p>	<p>Body Kinesthetic</p> <ul style="list-style-type: none"> • Make up a cooperative game • Practice physical exercise • Conduct hands-on experiments • Construct a model or representation 
<p>Musical Rhythmic</p> <ul style="list-style-type: none"> • Create raps • Play musical instruments • Write to music • Teach dance steps • Make up sounds and sound effects • Write a jingle • Create rhymes that... 	<p>Naturalist</p> <ul style="list-style-type: none"> • Collect and categorize data, materials, or ideas • Discover or experiment • Take a field trip • Study means of survival • Adapt materials to a new use • Label and classify 	<p>Intrapersonal</p> <ul style="list-style-type: none"> • Keep a personal journal • Write about personal experiences • Think about and plan... • Review or visualize • How would it feel to... • Imagine and write about the future 

Teacher Grading Rubric - Oral Presentation

	4	3	2	1
Organization	Student presents information in logical, interesting sequence which audience can follow.	Student presents information in logical sequence which audience can follow.	Audience has difficulty following presentation because student jumps around.	Audience cannot understand presentation because there is no sequence of information.
Subject Knowledge <ul style="list-style-type: none"> • use • abuse/potential threats • management/solutions 	Student demonstrates full knowledge (more than required) by answering addressing topic information and all class questions with explanations and elaboration.	Student is at ease with topic information and expected answers to all questions, but fails to elaborate.	Student is uncomfortable with information and is able to answer only a few questions.	Student does not have grasp of information; student cannot answer questions about subject.
Graphics	Student's graphics explain and reinforce text information and presentation ie, graph, map	Student's graphics relate to text and presentation.	Student occasionally uses graphics that rarely support text and presentation.	Student uses no graphics
Mechanics	Presentation has no misspellings or grammatical errors.	Presentation has no more than two misspellings and/or grammatical errors.	Presentation has three misspellings and/or grammatical errors.	Student's presentation has four or more spelling errors and/or grammatical errors.
Presentation <ul style="list-style-type: none"> • eye contact • articulation 	Student maintains eye contact with audience, seldom returning to notes. Student uses a clear voice and correct, precise pronunciation of terms so that all audience members can hear presentation.	Student maintains eye contact most of the time but frequently returns to notes. Student's voice is clear. Student pronounces most words correctly. Most audience members can hear presentation.	Student occasionally uses eye contact, but still reads most of report. Student's voice is low. Student incorrectly pronounces terms. Audience members have difficulty hearing presentation.	Student reads all of report with no eye contact. Student mumbles, incorrectly pronounces terms, and speaks too quietly for students in the back of class to hear.

DAY 4 ACTIVITY - PRESENTATION & REFLECTION

OBJECTIVE

Students will synthesize their research on a water-related topic, while using presentation skills, to demonstrate comprehension of site specific water use, abuse, and management.

PRESENTATION

Students share their presentations to students in grades K-5. The five minute presentations should include the uses and abuses of water sources and sustainable management of water resources.

CONCLUDING REFLECTION ACTIVITY

Students create a Flipgrid video where they must state and explain:

- three ideas or concepts they learned
- two ideas or concepts that surprised them and
- one thing they intend to start doing based on what they learned.

Collective responses should indicate if students demonstrated comprehension of the material. Flipgrid responses can be peer reviewed, or privately viewed by teacher.

ADDITIONAL WEBLINKS FOR STUDENTS

- YouTube Video: Colorado River - I am Red
https://www.youtube.com/watch?time_continue=30&v=mqYcC7jEe44
- Early River Civilizations Blank Map
https://php.radford.edu/~vga/wp-content/uploads/2013/09/WH13a_Attachment_A.pdf
- YouTube Video: Sacred but Polluted: River Ganges drowns in a sea of rubbish
https://www.youtube.com/watch?v=MUOnIFZ__6E&feature=youtu.be
- The Guardian: Threatened Rivers of the World
<https://www.theguardian.com/sustainable-business/gallery/2016/sep/22/worlds-threatened-rivers-pollution-industry-agriculture-in-pictures>
- Smithsonian: Exploring the World's Most Imperiled Rivers
<https://www.smithsonianmag.com/travel/exploring-the-worlds-most-imperiled-rivers-47048630/>
- World's Watershed mapped in detail
<https://bigthink.com/strange-maps/gorgeous-river-watershed-maps?rebelltitem=5#rebelltitem5>
- 50 Ways to Save Your River
<https://www.friendsoftheriver.org/2016/01/28/551/>

ADDITIONAL WEBLINK RESOURCES

- Water pollution || What are the causes of water pollution?
<https://www.youtube.com/watch?v=Om42Lppkd9w>
- What is water pollution and how can you help?
https://www.ducksters.com/science/environment/water_pollution.php

WEBLINK RESOURCES FOR TEACHERS

- WWF - Threats to Rivers
https://wwf.panda.org/our_work/water/freshwater_problems/river_decline/
- WWF - Threatened Rivers (List of rivers and how they are threatened)
https://wwf.panda.org/our_work/water/freshwater_problems/river_decline/10_rivers_risk/

- Threats to the Ganges River
<https://www.dw.com/en/indias-polluted-ganges-river-threatens-peoples-livelihoods/a-17237276>
- Cleaning up the Ganges - Financial Times
<https://www.youtube.com/watch?v=i9jX3BjtXgQ>
- Youtube: Sacred but polluted (Ganges)
https://youtu.be/MUOnIFZ__6E
- Go Ganges! Video of two adventurers who follow the Ganges from the headwaters to the river's mouth
<https://vimeo.com/ondemand/goganges>
- National Geographic's Learning Framework, the mindset of an explorer: ASK (Attitudes, Skills, Knowledge)
www.nationalgeographic.org/education/about/learning-framework/

EXTENSION IDEAS

- Field trip to local water treatment planned
- Visit local river/water bodies
- Participate in beach, lake, or river clean up service learning activities
- Exploration of spiritual and religious significance of rivers and other bodies of water
- Impacts of water abuse on threatened species and habitat loss
- Threats to water scarcity, climate change, and population growth
- Explore historic cases of water management
- Identify 2 creative ways humans in the past used water. For example, in 1695, the oldest fort in St. Augustine Florida called Castillo de San Marcos was designed in a way that the latrine was on the top level and human waste would fall to the bottom level. Then, when it was high tide, the Atlantic Ocean would enter the lower level of the fort and wash away the human waste.
- Four Corners (Physical activity to demonstrate comprehension)- To plan, put a list of multiple choice questions together. Each question should have four answers. Students gather in the center of the room, reading each question and its possible answers aloud. Students then move to the corner that represents what they believe is the correct answer. For example, the top-left room corner can be option A, the bottom-left can be B and so on. Depending on which answers students select (which corner they choose), the teacher should gain an understanding of class/student comprehension.
- Red light/Green Light Activity - Allow students to give you real-time feedback as you teach with double-sided red/green cards made from red/green construction paper cut into index card size, glued and laminated. As you deliver a lesson, students should hold the green side toward you if they understand everything. If something's unclear, encourage them to turn the red side forward. When you see red, stop and clarify — or expand upon — your points until you see green again. This should help you quickly assess if students are processing content as you deliver it.

