ELL Scaffolds for Curriculum Modules
Grade 3: Module 4

The Role of Freshwater in our Lives

Coordinators’ Networking Meeting #3
Western Suffolk BOCES Conference Center
February 5, 2015

(Adapted from: Engage NY: NYS CCLS ELA Grade 3-Module 4)
<table>
<thead>
<tr>
<th>Shift</th>
<th>Description</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shift 1</td>
<td>Balancing Informational &amp; Literary Text</td>
<td>Students read a true balance of informational and literary texts.</td>
</tr>
<tr>
<td>Shift 2</td>
<td>Knowledge in the Disciplines</td>
<td>Students build knowledge about the world (domains/content areas) through TEXT rather than the teacher or activities.</td>
</tr>
<tr>
<td>Shift 3</td>
<td>Staircase of Complexity</td>
<td>Students read the central, grade appropriate text around which instruction is centered. Teachers are patient, create more time and space and support in the curriculum for close reading.</td>
</tr>
<tr>
<td>Shift 4</td>
<td>Text-based Answers</td>
<td>Students engage in rich and rigorous evidence based conversations about text.</td>
</tr>
<tr>
<td>Shift 5</td>
<td>Writing from Sources</td>
<td>Writing emphasizes use of evidence from sources to inform or make an argument.</td>
</tr>
<tr>
<td>Shift 6</td>
<td>Academic Vocabulary</td>
<td>Students constantly build the transferable vocabulary they need to access grade level complex texts. This can be done effectively by spiraling like content in increasingly complex texts.</td>
</tr>
</tbody>
</table>
Grade 3, The Role of Freshwater around the World

This NYS CCLS module focuses on the importance of clean freshwater around the world. This unit builds on the background knowledge students developed in second grade regarding cycles in nature, in order to help them deepen their understanding of their overall dependence on earth’s limited water supply.

Guiding Questions and Big Ideas*

- **Where does our water come from? (Water Cycle)**
  - Water is a natural and finite resource that every living thing needs.

- **In what ways do the activities of people affect water and its use? (Water Pollution)**
  - How people live affects the quality and quantity of clean water.

- **How do writers use text-based evidence to strengthen their message? (Water Use Survey and PSA)**
  - Writers support their research with facts and details.

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CCLS Grade 3 – Module 4

Gathering Evidence and Speaking to Others*

This module focuses on the importance of clean freshwater. The students examine the water cycle and watersheds, comparing how different texts present similar information. Then students research challenges facing the earth’s clean water supply: pollution, and availability of clean water. Students complete a research project, and gather data and other information in order to determine what they can do to conserve and protect clean water. Students will create a public service announcement (PSA) based on their findings.

*Excerpted/adapted from EngageNY Curriculum Module: https://www.engageny.org/resource/grade-3-ela-module-4
Digital Jumpstart

http://www.youtube.com/watch?v=l67HwLegDLE
## Grade 3 – Module 4: Selected Vocabulary for the Water Cycle

<table>
<thead>
<tr>
<th>Entering/Emerging</th>
<th>Transitioning</th>
<th>Expanding</th>
</tr>
</thead>
<tbody>
<tr>
<td>sun</td>
<td>atmosphere</td>
<td>groundwater flow</td>
</tr>
<tr>
<td>ocean</td>
<td>fog</td>
<td>plant uptake</td>
</tr>
<tr>
<td>lake</td>
<td>dew</td>
<td>snowmelt</td>
</tr>
<tr>
<td>snow</td>
<td>seepage</td>
<td>sublimation</td>
</tr>
<tr>
<td>runoff</td>
<td>evaporation</td>
<td>transpiration</td>
</tr>
<tr>
<td>precipitation</td>
<td>condensation</td>
<td>infiltration</td>
</tr>
</tbody>
</table>
The Water Cycle Placemat

Water cycle diagram:
- Clouds
- Sun
- Precipitation
- Evaporation
- Snow and Ice
- Transpiration
- Runoff
- Lake
- Ocean
- Ground Water
- Long ago dinosaurs may have drunk the same water we drink today.

Source: [http://water.usgs.gov/edu/watercyclematsmallpage.html](http://water.usgs.gov/edu/watercyclematsmallpage.html)
Our interactive diagram allows you to "mouse around" the parts of the water cycle and view explanations, pictures, and more online. The diagram is available for three levels of students.

http://water.usgs.gov/edu/watercycle-kids.html
Vocabulary Activities for Water Cycle

The Water Cycle Worksheet

The Earth recycles water over and over again and has done for millions of years. It does this through a process known as the hydrological or water cycle.

Think about what these terms mean:

Precipitation
Evaporation
Condensation
Transpiration
Infiltration
Run-off

Now use the terms to label the various aspects of the water cycle.

Source: http://tools.atozteacherstuff.com/word-search-maker/wordsearch.php
Grade 3 - Module 4: Water Cycle

Purpose
To familiarize students with the Water Cycle through texts and video, and identify the differences between fact and fiction, as well as compare and contrast different accounts of the same story.

Activities
Students will read *The Magic School Bus at the Waterworks* and watch a video based on the book from the television series. They will create Venn Diagram showing the differences between the two versions. They will also develop a T-chart that shows the factual parts of the story vs. the fictional parts of the story.

Product
Students will choose whether to write a review of either the book or of the video, with sentence frames to assist in the writing process.

Resources
*The Magic School Bus at the Waterworks* by Joanna Cole
*Wet All Over* (video version of the book)
Video by Bill Nye on The Water Cycle
Grade 3 - Module 4: Water Cycle

Reading Standards for Informational Text

- RI.3.7. I can use information gained from illustrations (e.g., maps, photographs) and the words in a text to demonstrate understanding of the text (e.g., where, when, why, and how key events occur).

Writing Standards

- W.3.1. I can write opinion pieces on topics or texts, supporting a point of view with reasons.

Speaking and Listening Standards

- SL.3.4. I can report on a topic or text with appropriate facts and relevant, descriptive details, speaking clearly at an understandable pace.

Language Standards

- L.3.1. I can demonstrate command of the conventions of standard English grammar and usage when writing or speaking.
Read Aloud: The Magic School Bus: At the Waterworks

Students will get a first-hand look into the water cycle and how it functions. This book shows the students how water flows through the purification system and how it flows down streams and rivers after falling from the sky. The book is available in both English and Spanish.
“WET ALL OVER”

https://www.youtube.com/watch?v=hpiCzD1Ghdw
The Water Cycle

https://www.youtube.com/watch?v=eng31SoXoRI
Fact vs. Fiction

The Magic School Bus at the Waterworks

<table>
<thead>
<tr>
<th>FACT</th>
<th>FICTION</th>
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<tbody>
<tr>
<td></td>
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</table>

As a whole group, facilitated by the teacher, students will determine which information or events in the book are fact, and which are fiction.
After reading the book and viewing the video, students will work in small groups to complete the Venn diagram, finding at least 3 similarities and 3 differences between the book and the video. They will then present their findings to the whole class.
### Book or Video Review

______________________________
By:______________________________

In *(the book/video)*____________, the most important facts I learned were__________

I thought the *(book/video)* was ________
because__________

People should *(read or see/not read or see)*
this *(book/video)* because__________

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Working independently, with extensive scaffolding from their teacher, students will write a review of either the Magic School Bus book or video, or the Bill Nye video.

Students will need to cite at least one or two details (or more) from the source selected.

Then, students will give their opinion about the book or video.

Finally, they decide whether to recommend the book or video to their readers, and explain why.
# Grade 3 - Module 4: Water Pollution

## Purpose

In this unit, students will learn about the various causes of the pollution of freshwater, and will be able to explain the effects of such pollution.

## Activities

In this unit students will listen to an informational text on water pollution that the teacher reads aloud and complete a graphic organizer based on what they heard. Later, students will individually read another text closely, and using their graphic organizers, work in small groups to complete a cause and effect graphic based on the key details in the text.

## Product

Each small group will choose one cause and effect of freshwater pollution that they believe is the most important, share their choice with the whole class, defending their choice.

## Resources

- [https://www.youtube.com/watch?v=MwX3FFOJZwk&x-yt-ts=1422579428](https://www.youtube.com/watch?v=MwX3FFOJZwk&x-yt-ts=1422579428)
Reading Standards for Informational Text
• RI.3.3. I can describe how events, ideas or concepts in an informational text are related)

Writing Standards
• W.3.1. Write opinion pieces on topics or texts, supporting a point of view with reasons.
• W.3.4. With guidance and support from adults, produce writing in which the development and organization are appropriate to task and purpose.

Speaking and Listening Standards
• SL.3.4. I can report on a topic or text with appropriate facts and relevant, descriptive details, speaking clearly at an understandable pace.

Language Standards
• L.3.1. Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.
All living things need water to stay alive, which is why water is our most precious natural resource. For this reason, it is important to learn about the causes of water pollution.

Water pollution is simply any harmful thing that is added to water. There are many causes of water pollution, but you cannot always see what is polluting it. Water can look clear, yet still be unsafe. It can be polluted by microscopic organisms, which are so tiny, they can only be seen with a microscope. These organisms are sometimes contagious and can make us sick. One cause of microscopic organisms in water is sewage from pipes.

Another major cause of water pollution is the fertilizers farmers use to make their crops grow fast and the pesticides they use to kill bugs and rodents. When it rains, these fertilizers and pesticides can wash off into waterways.

In addition, wastewater from factories contains harmful chemicals that can be poisonous to marine life. This wastewater is also very hot, and when it is pumped into waterways, it has the effect of heating up the temperature of the water. Many plants and animals cannot survive if the temperature of the water rises due to lack of oxygen.

Litter also pollutes waterways. When not disposed of properly, garbage shows up on the shorelines of beaches and can also be harmful to marine animals. Moreover, anything with a sharp edge can cut a mammal or fish. Marine animals are also known to mistake garbage for food.

Petroleum companies ship their oil all over the world in large supertankers, but accidents do happen. An important cause of water pollution and a great loss of marine life along shorelines is accidental oil spills by these large supertankers.

Sources:
Video: https://www.youtube.com/watch?v=MwX3FFOJZwk&x-yt-ts=1422579428
<table>
<thead>
<tr>
<th>What is one cause of water pollution? Please write and/or draw your answer.</th>
<th>What is a cause of microscopic organisms in water? Please write and/or draw your answer.</th>
</tr>
</thead>
<tbody>
<tr>
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</tr>
<tr>
<td>What is a harmful effect of litter in waterways? Please write and/or draw your answer.</td>
<td>What is the effect of very hot wastewater pumped into waterways? Please write and/or draw your answer.</td>
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</tbody>
</table>
Water Pollution

What is water pollution?
Water pollution is when waste, chemicals, or other particles cause a body of water (i.e. rivers, oceans, lakes) to become harmful to the fish and animals that need the water to survive. Water pollution can disrupt and negatively impact nature's water cycle as well.

Natural Causes of Water Pollution
Sometimes water pollution can occur through natural causes like volcanoes, algae blooms, animal waste, and silt from stormes and floods.

Human Causes of Water Pollution
A lot of water pollution comes from human activity. Some human causes include sewage, pesticides and fertilizers from farms, waste water and chemicals from factories, silt from construction sites, and trash from people littering.

Oil Spills
Some of the most famous incidents of water pollution have been oil spills. One was the Exxon Valdez oil spill which occurred when an oil tanker hit a reef off the coast of Alaska and over 11 million gallons of oil spilled into the ocean. Another bad oil spill was the Deepwater Horizon oil spill when an explosion at an oil well caused over 200 million gallons to spill into the Gulf of Mexico.

Acid Rain
Air pollution can also have a direct effect on water pollution. When particles like sulfur dioxide get high into the air they can combine with rain to produce acid rain. Acid rain can turn lakes acidic, killing fishes and other animals.

Effects on the Environment
Water pollution can have disastrous effects on the environment.
- Pollution in the water can reach a point where there isn't enough oxygen in the water for the fish to breathe. The fish can actually suffocate!
- Sometimes pollution affects the entire food chain. Small fishes absorb pollutants, such as chemicals, into their bodies. Then bigger fishes eat the smaller fishes and get the pollutants too. Birds or other animals may eat the bigger fishes and be harmed by the pollutants. One example of this was the use of the insecticide (bug killer) DDT. When birds of prey ate fishes that were infected with it, they would lay eggs with thin shells. The population of birds of prey began to drop until DDT was banished.
- Sewage can also cause major problems in rivers. Bacteria in the water will use oxygen to break down the sewage. If there is too much sewage, the bacteria could use up so much oxygen that there won't be enough left for the fish.
- Water pollution from major events like acid rain or oil spills can completely destroy marine habitats.

Effects on Health
One of the most precious and important commodities for life on planet Earth is clean water. For over 1 billion people on the planet, clean water is nearly impossible to get. Dirty, polluted water can make them sick and is especially tough on young children. Some bacteria and pathogens in water can make people so sick they can die.

Types of Water Pollutants
There are many sources of water pollution. Here are a few of the major causes:
- Sewage - Even today sewage is flushed directly into streams and rivers in many areas around the world. Sewage can introduce harmful bacteria that can make people and animals very sick.
- Farm animal waste - Waste from large herds of farm animals such as pigs and cows can get into the water supply from the runoff of rain and large storms.
- Pesticides and herbicides - Pesticides are often sprayed on crops to kill bugs and herbicides are sprayed to kill weeds. These strong chemicals can get into the water through runoff of rain storms. They can also contaminate rivers and lakes through incidental spills.
- Construction, floods, and storms - Silt from construction, earthquakes, floods, and storms can lower the oxygen content in the water and suffocate fish.

Facts About Water Pollution
- Soap from washing your car can run down the street drain and cause water pollution.
- Only around 1% of the Earth's water is fresh water. The rest is salty and we can't drink it.
- Around 60% of the rivers and lakes in the United States are too polluted for fishing or swimming.
- The Mississippi River carries around 1.5 million tons of pollution into the Gulf of Mexico each year.
- Between 5 and 10 million people die each year from water pollution related illnesses.

Source: http://www.ducksters.com/science/environment/water_pollution.php
Water Pollution

Sewage from Pipelines
- Microscopic Organisms/Make People Sick
- Can Wash off into Waterways
- Poisonous to marine life/Temperature of water rises due to lack of oxygen
- Marine animals can mistake harmful garbage for food and get hurt
- Great loss of marine life along shore lines

Grade 3 - Module 4: Research Project

Purpose
In this unit students will conduct a survey on the ways in which water is used at home, and write a research report based on their findings.

Activities
Students will survey their family to determine the amount of water that is used at home on a daily basis, analyze the results, and report the results of the survey to the whole class.

Product
In small groups, students will create a poster, video, or audio public service announcement about ways to conserve water use.

Resources
http://www.ecokids.ca/pub/eco_info/topics/water/water/index.cfm
https://www.youtube.com/watch?v=0Am9JPfuNsw
https://www.youtube.com/watch?v=x0dAYgVlchE
Grade 3 - Module 4: Research Project

Reading for Information Standards
• RI 3.7. I can use information gained from illustrations (e.g., maps, photographs) to understand informational text.

Writing Standards
• W.3.7. I can conduct a research project to become knowledgeable about a topic.
• W.3.4. With support from adults, I can produce writing that is appropriate to task and purpose.

Speaking and Listening Standards
• SL.3.4. I can report on a topic or text with appropriate facts and relevant, descriptive details, speaking clearly at an understandable pace.
• SL.3-5. I can use drawings or other visual displays to support what I say.

Language Standards
• L.3.1. I can use grammar conventions to send a clear message to a reader or listener.
Grade 3 - Module 4: Research Project

Source: http://www.ecokids.ca/pub/eco_info/topics/water/water/index.cfm
How much water do you use when you take a shower? Wash a load of clothes? Flush a toilet? Even brush your teeth? One important measurement of water use is how much water one person uses in one day, or per-capita water use (per is Latin for by and capita is Latin for head). The number is usually expressed as gallons of water used per person per day.

Talk to your family and complete one of the following form to get an estimate of how much you use on a typical day.

Teacher will use an exemplar to explain how to analyze the survey results.

Students work in pairs or small groups to complete their analysis. Using the information they gained throughout the unit thus far, they will choose either to compose a poster, create a video, or make a radio announcement that will persuade others how to help ensure the purity of freshwater or how to conserve their freshwater use.
## Simple Survey on Daily Water Use

**Daily Water Use at Home**

Complete this survey to estimate how much water is used in your home daily.

**Average Use:** Write the number of times you and your family members do each activity in one day. Then multiply the number for **Water Used** by the **Number of Times** the activity is done. This will give you the number for the **Gallons Used** column.

**Calculated Use:** Record the number of total minutes used for each activity. Then multiply the number for **Water Used** by the number of **Total Minutes** to find the number for the **Gallons Used** column. For an activity you didn’t do, place a 0 under **Gallons Used.** Add all the numbers under **Gallons Used** to find the **Total Gallons Used**.

### AVERAGE USE

<table>
<thead>
<tr>
<th>Activity</th>
<th>Water Used</th>
<th>Number of Times</th>
<th>Gallons Used</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dishwasher</td>
<td>12 gallons per load</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Toilet Flushing</td>
<td>4 gallons per flush</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bathing</td>
<td>45 gallons (full tub)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Laundry</td>
<td>43 gallons per load</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### CALCULATED USE

<table>
<thead>
<tr>
<th>Activity</th>
<th>Water Used</th>
<th>Total Minutes</th>
<th>Gallons Used</th>
</tr>
</thead>
<tbody>
<tr>
<td>Garbage Disposal</td>
<td>4 gallons per minute</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brushing Teeth</td>
<td>4 gallons per minute</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Washing Hands</td>
<td>4 gallons per minute</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Washing Dishes by Hand</td>
<td>4 gallons per minute</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shower</td>
<td>4 gallons per minute</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yard Watering by Hand</td>
<td>9 gallons per minute</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Total Gallons Used**

Bar Graph of Survey Results

Gallons of Water Used

- Dishwasher: 24 gallons
- Toilet Flushing: 4 gallons
- Bathing: 40 gallons
- Laundry: 45 gallons
- Gargage Disposal: 43 gallons
- Brushing Teeth: 4 gallons
- Washing Dishes by Hand: 80 gallons
- Yard Watering by Hand: 90 gallons
- Shower: 40 gallons

Legend: Gallons of Water Used
On the basis of what you have learned, work with your group to create a Public Service Announcement (PSA) to convince people to conserve their freshwater use.
Examples of Poster-Style Public Service Announcements

Retrieved from:
Example of a Video Public Service Announcement

Source: https://www.youtube.com/watch?v=0Am9JPfuNsw
Example of a Video Public Service Announcement

https://www.youtube.com/watch?v=x0dAYgVlcHE
# Rubric for Evaluating PSA Project

<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>Ready for Madison Avenue</th>
<th>Junior Account Executive</th>
<th>Apprentice</th>
<th>New Recruit</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Quality of Information</strong></td>
<td>Information clearly relates to the main topic. It includes several supporting details and/or examples.</td>
<td>Information clearly relates to the main topic. It provides 1-2 supporting details and/or examples.</td>
<td>Information clearly relates to the main topic. No details and/or examples are given.</td>
<td>Information has little or nothing to do with the main topic.</td>
</tr>
<tr>
<td><strong>Interest and Purpose</strong></td>
<td>Video, announcement, or poster has a clear and interesting purpose.</td>
<td>Video, announcement, or poster is interesting but purpose is somewhat unclear.</td>
<td>Video, announcement, or poster is not very interesting and purpose is somewhat unclear.</td>
<td>Video, announcement, or poster is not interesting and has no discernable purpose.</td>
</tr>
<tr>
<td><strong>Conventions</strong></td>
<td>No grammatical, spelling or punctuation errors.</td>
<td>Almost no grammatical, spelling or punctuation errors</td>
<td>A few grammatical, spelling, or punctuation errors</td>
<td>Many grammatical, spelling, or punctuation errors</td>
</tr>
</tbody>
</table>

Additional Resources for Instructional Planning

- http://www.watereducation.org/general-information/water-cycle
- http://www.slideshare.net/yapsmail/3-d-amelia-wong-water-pollution-project?qid=6b18a483-c332-42c9-a4e4-338b12c9b88a&v=qf1&b=&from_search=8
- http://www.watereducation.org/general-information/water-conservation-measures
- http://www.epa.gov/WaterSense/kids/
- http://wateruseitwisely.com/kids/lesson-plans/