

**Outcome(s) of Lesson: Grade 8 Science Unit E Freshwater and Saltwater Systems**

- SLE 4. Analyze human impacts on aquatic systems; and identify the roles of science and technology in addressing related questions, problems and issues.
  - Identify major factors used in determining if water is potable, and describe and demonstrate tests of water quality.

**How will I know the students have achieved the learning outcome?**

- (Introductory Lesson) – However notes and conversational participation will indicate understanding.
- Written responses on worksheet will provide formative feedback on where to begin scaffolding for unit objectives.

**HOOK:**

- <https://www.sacredrelationship.ca/documentary/>
  - **Water Sacred Relationship Video (52mins)** – (Download and crop around key points)
    - Albertan made documentary on sacred relationship between Indigenous culture and water.
    - **Students are instructed to take notes while enjoying video of interesting facts and opinions.**
      - Inform students notes will be handed in for participation marks.

**Learning Opportunities:**

Time	Learning Opportunity	How do I check that students understand what to do?
20	Use <i>As Big as The Sky, As Tall as the Trees</i> illustrated book as a backdrop while discussing documentary. -Share- (*B=Illustrated Book, D=Documentary) <b>Teacher will pose a statement highlighted in <i>As Big as the Sky...</i> and students will share notes and thoughts (from the documentary) associated with bold statements.</b> -Sharing will be done in Round Robin style (Kagan Structure) with their table groups. <ul style="list-style-type: none"> <li>• <b>Statement 1.</b> (B p.6-7) <b>Mother Earth is home to creation and connects us all.</b> <ul style="list-style-type: none"> <li>○ Possible notes from Documentary.</li> <li>○ (D) Indigenous culture believes we are all interconnected through nature.</li> <li>○ (D) Everything thrives and survives due to relationship                             <ul style="list-style-type: none"> <li>▪ Creator and People</li> </ul> </li> </ul> </li> </ul>	Heads down – Thumbs Up.  <b>Materials Needed</b> - <i>As Big as The Sky, As Tall as the Trees</i> -Water Testing Kits -Water Quality Testing Worksheet

<p>10</p>	<ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li> <ul style="list-style-type: none"> <li>▪ People and Mother Earth</li> </ul> </li> <li>○ (D) All gifts from the creator deserve our respect</li> <li>○ (D) We must take care of the Creator gifts for we depend on them</li> </ul> </li> <li>• (B p.16-17) <b>Water is a most important gift. It gives and sustains life for all living things.</b> <ul style="list-style-type: none"> <li>○ (D) Water can wash away sickness and purify the body</li> <li>○ (D) Water brings life to your table                             <ul style="list-style-type: none"> <li>▪ Animals (Meat) require water to survive</li> </ul> </li> <li>○ (D) Water is tantamount to survival</li> </ul> </li> <li>• (D) <b>For thousands of years Aboriginals sought balance with the natural world</b> <ul style="list-style-type: none"> <li>○ (D) They believe that everything was created in balance</li> <li>○ (D) Water is like the heart and veins of our planet</li> </ul> </li> <li>• (B p.26-27) <b>Mother Earth’s Heart beat is like the sound of a rushing river</b> <ul style="list-style-type: none"> <li>○ (B) She is all around us and we must take care of her gifts, so her song can be strong and continue to sing for years to come.</li> </ul> </li> </ul> <p>Pose Inquiry Based Question to class: <b>How well do you think we are doing at keeping the balance? Explain or give an example of why you have come to your conclusion.</b></p> <ul style="list-style-type: none"> <li>○ Think Pair Share using Stand Up, Hand Up Pair Up to find a partner.             <ul style="list-style-type: none"> <li>○ (Movement break)</li> <li>○ Repeat as necessary</li> </ul> </li> </ul> <p>Give students instructions for next week experiment.</p> <p><b>Let’s find out how well we are taking care of the water sources around us.</b></p> <ul style="list-style-type: none"> <li>○ Students are asked to retrieve water samples from local sources and bring them to class in Tupperware.             <ul style="list-style-type: none"> <li>○ Water should not be from a tap but can be from any other source.                     <ul style="list-style-type: none"> <li>▪ Ex. Pond, Stream, River, Lake, Puddle</li> <li>▪ Send home form/email directing parents to ensure safety when collecting samples.</li> </ul> </li> </ul> </li> <li>○ Students will complete <i>Water Quality Testing</i> worksheet as an introduction to an Analyzing the human impact on aquatic systems unit.             <ul style="list-style-type: none"> <li>○ Using some water testing kits students will measure:                     <ul style="list-style-type: none"> <li>▪ Alkalinity</li> </ul> </li> </ul> </li> </ul>	
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	<ul style="list-style-type: none"><li>▪ Ammonia</li><li>▪ Carbon dioxide</li><li>▪ Chlorine</li><li>▪ Nitrite and Nitrate</li><li>▪ Dissolved oxygen</li><li>▪ pH</li><li>▪ Phosphorus</li><li>▪ Turbidity</li></ul> <ul style="list-style-type: none"><li>○ They will then hypothesize what each sample could be used for and ways in which each sample could be improved.</li></ul> <p>Resources Courtesy of:</p> <ul style="list-style-type: none"><li>○ <a href="http://www.lcmm.org/education/resource/on-water-ecology/water-quality-testing.html">http://www.lcmm.org/education/resource/on-water-ecology/water-quality-testing.html</a></li><li>○ <a href="https://www.sacredrelationship.ca/documentary/">https://www.sacredrelationship.ca/documentary/</a></li></ul> <p>Further Information:</p> <ul style="list-style-type: none"><li>○ <a href="https://www.epcor.com/learn/teachers-resources/drainage-education/Documents/StormWaterGuideGrade8.pdf">https://www.epcor.com/learn/teachers-resources/drainage-education/Documents/StormWaterGuideGrade8.pdf</a></li></ul>	
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**How do I differentiate the learning opportunity for all learners?**

Offer note taking strategies:

- Mind mapping
- Using I-pads
- Bullet point
- Sketching

Video could be watched individually.

**CLOSURE:**

- Send home form to parents concerning water collection.
- Have students reflect on possible solutions to decrease water pollution. May ask guardians/siblings/peers/adults.

<b>Lesson Plan Analysis: Using your lesson above, describe the following: (This information must be in your learning opportunities)</b>	
<b>Accommodations</b>	Video is available in Closed Captioning. Headphones available for individual focus. Additional water samples should be brought by teacher for students unable to retrieve their own.
<b>Cooperative Learning Strategies used</b>	Round Robin Think Pair Share
<b>Movement Breaks</b>	Stand Up Hand Up Pair Up
<b>Modes of Learning (Differentiation)</b>	V – Visual Component – Video <i>Water Sacred Relationship</i> A – Audio Component – Round Robin Activity R – Reading Component – <i>Water Quality Testing</i> worksheet K – Kinesthetic Component – Students must retrieve water samples from Neighborhood
<b>Higher Order Question(s)</b>	What key to our survival according to Indigenous Culture? Ex. Relationship, Balance What steps can we take as individuals to achieve better balance with the gift of water?