

**Outcome(s) of Lesson:**

1. Explain the need for efficient energy conversions to protect our environment and to make judicious use of natural resources (e.g., advancement in energy efficiency; Aboriginal perspectives on taking care of natural resources). Students will use previous knowledge of mechanical energy to integrate into their plans.
2. Students understand the significance water has on our livelihood, and why aboriginal peoples see it as a sacred element to sustain life.

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

- Students will have used the design thinking method to come up with a possible solution to tackle the poor water conditions many aboriginal groups face today.
- Students recognize and refer to aboriginal perspectives on water in their design thinking process.

**HOOK:**

- What is water mind map
- After the mind map, this video will be watched and analyzed: <https://www.youtube.com/watch?v=kkqf3WRwqul>
- Another short video on the aboriginal perspective of water will be shown after to allow students another perspective.
- Teacher will add another component to the mind map using aboriginal perspectives on water, and their relevancy to our world. This will also be done by reading the water component in "As Big as the Sky, as Tall as the Trees."
- [https://www.youtube.com/watch?v=keRf2\\_Dc0No&t=323s](https://www.youtube.com/watch?v=keRf2_Dc0No&t=323s) : **Water is Life.**

**Learning Opportunities:**

Time	Learning Opportunity	How do I check that students understand what to do?
25min	Students will watch <i>Water: Life Blood of Energy</i> , and create a mind map of the information they learn in the video. If students do not like to use mind maps, they can suggest another mode of note taking that will help them retain the information. Also, students who have trouble hearing, seeing or focusing on the video may use a personal device with headphones as long as it is used appropriately.	Before playing the video, ask students what kind of categories they might use for this mind map. In other words, what might you be looking for while watching?
15min	After the video, allow students to stand and do a quick hand up, stand up, pair up. They will quiz their partner on one aspect of the video. If a student does not know the answer, the one who asked will teach it to them briefly. A group discussion will then take place and a	

20min	<p>class mind map will be created on the whiteboard.</p> <p><b>Center of the mind map:</b> Waters Part in Energy Production. Allow students to come up with the sub categories and arms. Prompt the discussion of positives and negatives of water use when creating energy. Reflect on aboriginal perspectives and add them to the mind map.</p> <p>Students will now have the opportunity to get into their table groups and use the design thinking process to come up with an idea to improve aboriginal reserve drinking water supply. This will consist of coming up with a mechanical approach, as well as a social awareness initiative.</p> <p>Provide students with chart paper to begin their design thinking process.</p> <p><b>Empathize:</b> Students will research aboriginal water concerns, and determine the causes and issues associated with it; considering aspects of mechanical / technological, and social components.</p> <p><i>Students will most likely get to this point and would pick up from here next day.</i></p> <p><b>Project Continuation (Further Lessons)</b></p> <p>Define: All group members will compare their research, and start listing possible ideas of an initiative to bring awareness and change to reserve water issues both socially and scientifically.</p> <p>Ideate: Be creative and discuss and come up with crazy ideas that maybe people have never thought of yet. Allow students to think outside the box, even if their ideas may be abstract.</p> <p>Prototype: At this point, students will have written out their ideas in a point form informative assignment.</p> <p>Test: Students will do a survey of school faculty to find out if they would be willing to be part of an initiative to bring awareness and change to reserve water issues. These questions will consist of their willingness to raise taxes, or consume less water on a regular basis.</p> <p>Implement: Students will “publish” their initiative, in other words, they may create a brochure explaining their ideas using all of the informative gathered to hand out to people within the school. Other ideas will be encouraged. Creativity is key!</p>	<p style="text-align: center;"><b>Materials Needed</b></p> <p>For this lesson:</p> <ul style="list-style-type: none"> <li>Projector</li> <li>Internet Access</li> <li>Computer</li> <li>Chart Paper</li> <li>Markers</li> <li>White Board Markers</li> <li>Pen/Pencil/Paper</li> </ul>

<b>How do I differentiate the learning opportunity for all learners?</b>		
<p>I will allow students to do electronic or print research. They will also have the opportunity to come up with their own creative initiatives in their own unique way. Multiple intelligences will be considered and encouraged when coming up with their ideas. For example, students could create a music video, or perhaps an artistic cartoon. The possibilities are endless.</p> <p>Students can also “take notes” if a mind map does not suit their learning. Other methods of gathering information will be accepted as long as students are showing a keen interest in the documentary.</p>		

<b>TRANSITION:</b> <i>(what will students do when they are finished?, how will we move to the next learning opportunity?)</i>	
<ul style="list-style-type: none"> <li>If students make it to the emphasize stages and complete them, they can continue to the next design thinking process.</li> </ul>	
<b>CLOSURE:</b>	
<p>Allow students to go home and think more about their water usage habits. Get them to jot down a tracking sheet of how often they used water and for how long. They can share this information next class.</p>	

<b>Lesson Plan Analysis: Using your lesson above, describe the following: (This information must be in your learning opportunities)</b>	
<b>Accommodations</b>	<p>Students may use an alternative mode for note taking if Mind Maps are not their method of choice.</p> <p>Students can use headphones and a private computer to watch the documentary if they are having trouble focusing.</p>
<b>Cooperative Learning Strategies used</b>	<p>Group design thinking process.</p> <p>Hand up/Stand up/ Pair Up.</p>

<b>Movement Breaks</b>	Hand up/Stand up/ Pair Up.
<b>Modes of Learning (Differentiation)</b>	Visual // Technology //Design Thinking
<b>Higher Order Question(s)</b>	<ul style="list-style-type: none"><li>• Why are efficiency and sustainability important considerations in designing energy conversion technologies?</li><li>• Why do aboriginal cultures get overlooked when it comes to water safety?</li><li>• Why is it important to conserve water even in our own homes?</li></ul>
<b>Aboriginal Acknowledgement</b>	Be sure to acknowledge territory before lesson.  Awareness of aboriginal water issues.

**Reflection and Revisions:**



