

E-B.2 – Water, First Nations Cultures, Statistics

Grade 9 Mathematics

Kevin Duchscherer

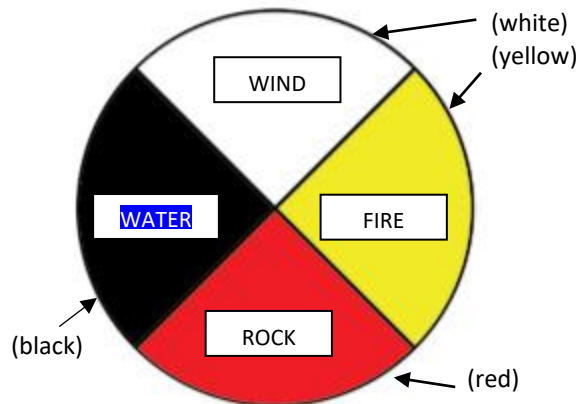
Grade 9 students are introduced to the many and diverse roles that water plays in their everyday world and in First Nations cultures. Students identify some social issues related to clean water. They are assigned a poster-production project to communicate statistical information that sheds light on a social issue chosen by each student. Critical thinking over how to recognize valid sources of statistics ensues. Formats for communicating statistical information are studied. Each student chooses a format amenable to their poster's statistics and defends their choice.

Curricular Knowledge

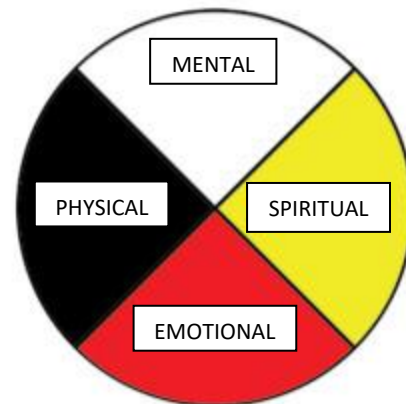
- Outcome SP9.4:* Research and present how First Nations and Métis peoples, past and present, envision, represent, and make use of probability and statistics.
- Outcome SP9.2* Demonstrate an understanding of the collection, display, and analysis of data through a project.

Indigenous Mathematizing and Perspectives:

*Cree medicine wheel teachings:*¹



Creator made the four components of Mother Earth. They are sacred.



The four dimensions of humanness.

1. The circle is very sacred for traditional First Nations peoples. All ceremonies, celebrations, gatherings, and ways of thinking about the world are done within a circle format. For most Canadian First Nations peoples, the assumed direction sequence around a circle is based on the way the sun moves across the sky (clockwise). For the Haudenosaunee Confederacy (Iroquois), the sequence is the way the moon moves across the sky from day to day.
2. Although the medicine wheel has four parts (in recognition of the sacred number four), everything within it is interconnected holistically.

¹ Information taken from Sharon Meyer, PowerPoint Medicine Wheel Teachings. North East School Division.

Traditional First Nations Relationship with Water:

1. Water moves in the veins of Mother Earth as the blood in the veins of our human bodies.
2. Water gives us life. We spend the first nine months within the womb of our mother.
3. Water can take our lives. If we are not respectful of water, we could drown.
4. Water is a source of food when we fish or harvest wild rice.
5. Water becomes an integral part of sacred ceremonies such as the in the Sweat Lodge.
6. Thunderbird announces the approach of storms that bring us water.
7. Soaking animal hides in the production of clothing and shelter.
8. Soaking willow branches for weaving and making dream catchers.

Time: 2-3 hours

Teacher Materials

PowerPoint: Teacher Presentation Water Poster Assignment from the North East School Division (see PowerPoint file).

Student Materials

Computer with internet connections; printer is optional.

Vocabulary

Statistics, medicine wheel, spiritual, Mother Earth, traditional ceremonies, sacredness, Thunder Bird, Grandfather Thunder.

Assessment

Formative: Group discussions, indications of using critical thinking over statistics sources,

Summative: Poster created by students.

Criteria for assessment:

- Using data to create awareness for the sacredness of water.
- Using statistics to create an awareness about clean water.
- Poster includes a visual of water statistics and a visual about your concern about clean water.
- You must cite where you located your information.

Example Posters

See Appendix B for the following student posters produced by three Grade 9 students at Star City High School, Star City, Saskatchewan:

- Drinking Water Crises in Canada.
- Drinking Water Advisories on First Nations Reserves.
- Boil Water Advisories on First Nations Reserves.

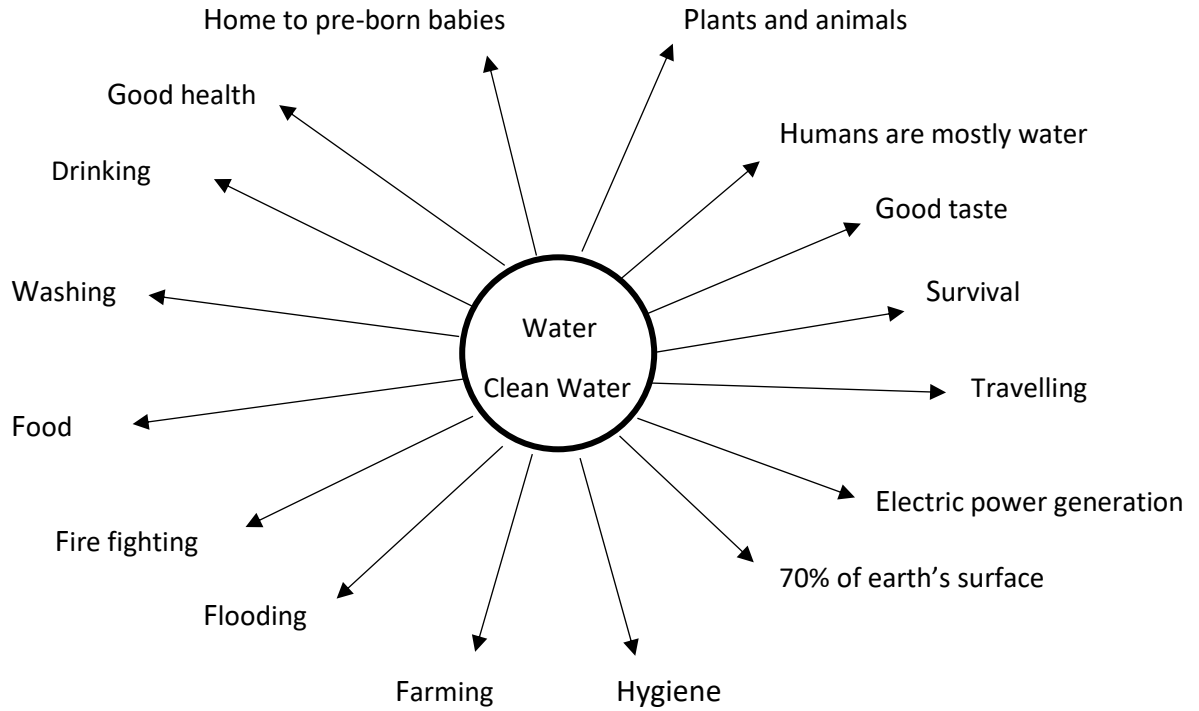
Lesson

1. If feasible, have students sit in a circle on the floor. (Some First Nations people leave a small opening in the circle to facilitate Creator's movement in and out of the circle.)
2. Begin a brain-storming session with the question, "Why is water important to us?"
3. Record students' contributions as a diagram on the board. See Appendix A for an example of what my students created.

4. When a lull occurs, change the question to: “Why is *clean* water important to us?” Continue constructing the diagram with more students’ ideas.
5. Encourage students to discuss plausible reasons that explain some of their ideas especially including the number of Indigenous communities that do not have clean water.
6. When the brainstorming and discussion begins to subside, change the topic to the poster project they will do individually in relation to mathematical statistics and issues of clean water.
7. Using the PowerPoint in Appendix C, review some of the content in the brainstorming diagram by illustrating some background ideas with medicine wheel teachings such as the sacredness of water from an Indigenous understanding.
8. End the PowerPoint with your directions for the assignment to create a poster and how it will be assessed.
9. Show a few examples of the type of posters you have in mind but emphasize that their ingenuity, creativity, logical reasoning, and critical thinking will ensure that their poster is unique to who they are.
10. Prepare the students to go to a computer room where they can begin to search for reliable statistical data relevant to the emerging topic for their poster. The final product can be done by hand or generated by a computer.
11. Just before they leave the classroom, ask them, “What do you think is the reason we began with you sitting in a circle on the floor?” This establishes a short discussion that encourages students to consider Indigenous related poster themes.
12. Give students sufficient time to get a good start on their project that can be worked on at home for most students.
13. Encourage students to go to data collection sites like Statistics Canada and then use key search words to narrow down their search for information.
14. Encourage students to be critical of other media sites watching for misrepresented data (e.g., bias) and other non-neutral representations.

Appendix A

Brainstorming Diagram Produced



Appendix B

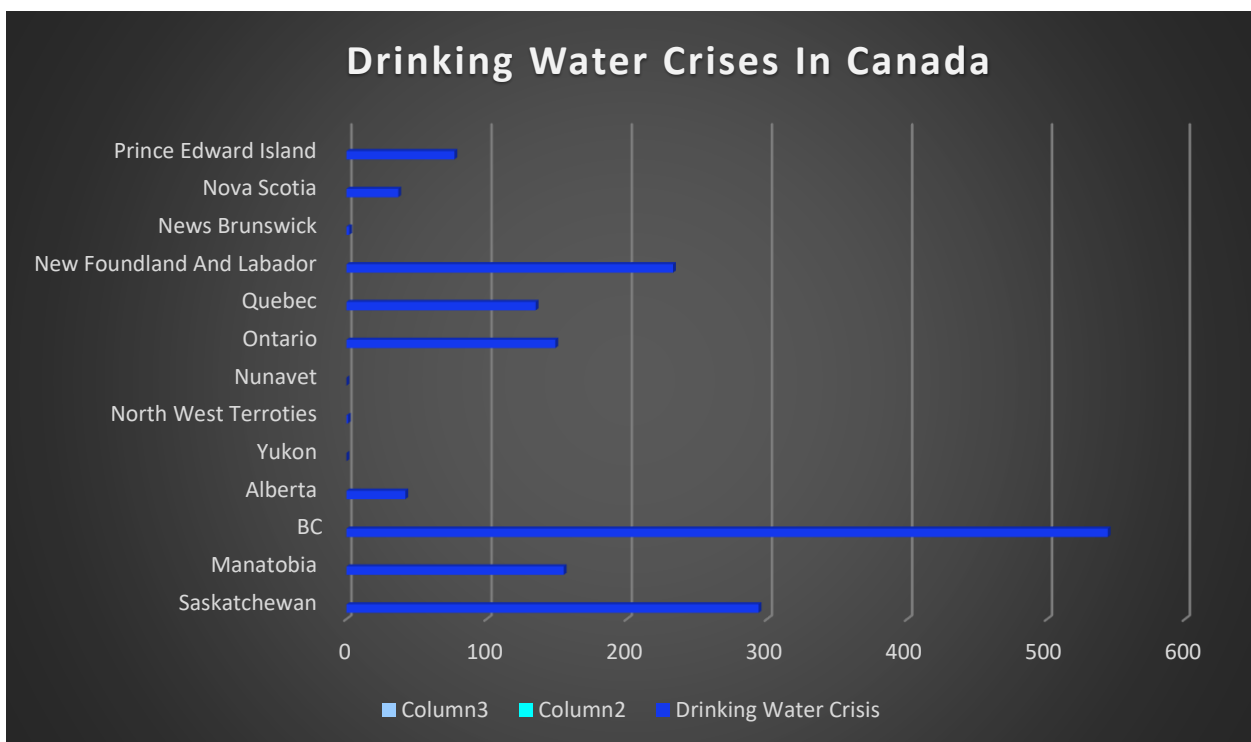
Sample Posters Produced by Kevin's Students

The following examples (duplicated on the next three pages) could be shown to students before they began their own statistics project. The examples define the type of product expected by Kevin, but no project would be acceptable if it looked like one of these examples.

1. Drinking Water Crises in Canada.
2. Boil Water Advisories on First Nations Reserves.
3. Drinking Water Advisories on First Nations Reserves.

Sample Poster

In January, 2015 there was 1,838 water advisories, that were in effect. There were also 1,669 water advisories all in Canada. 169 drinking water advisories, in 126 First Nations communities. This shows that there is a drinking water crisis in Canada because, it's a big problem that most people don't realize. Communities needs water economic social, culture, and spiritual purposes. Not having safe water to use is a problem all across Canada and in First Nation communities have. Canada needs to immediately to make changes in our national water policy. If Canada changes the national water policy by addressing the current threats. We also need to make sure that our beautiful country, has clean and safe drinking water for everyone. If us Canadians want to make a change for our drinking water advisories, we must protect our water.



Bibliography:

<https://www.sac-isc.gc.ca/eng/1100100034879/1521124927588> Government Of Canada 5\8\2019

<https://www.canada.ca/en/indigenous-services-canada/services/drinking-water-monitoring.html>

Government of Canada 5\8\2019

<https://canadians.org/drinking-water> Drinking Water 5\8\2019

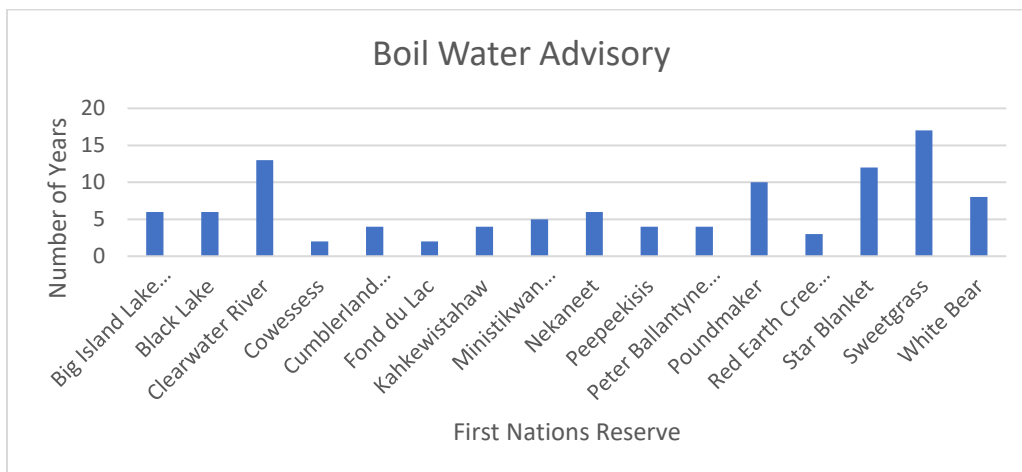
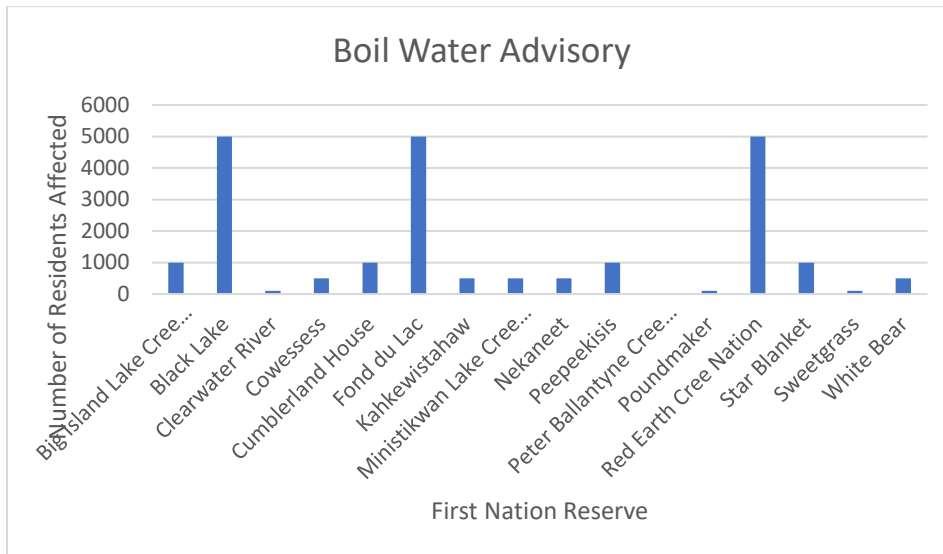
Sample Poster

Boil Water Advisories on First Nations Reserves

Currently there is 16 Reserves where there is a long-term boil water advisory still in effect. These boil water advisories have affected up to 21, 800 residents. The earliest boil water advisory that is still in effect is Sweetgrass. It was put in place 17 years ago.

A boil water advisory is issued when there are contaminants in the water or water system.

During a boil water advisory, residents need to boil their drinking and cooking water for one full minute.

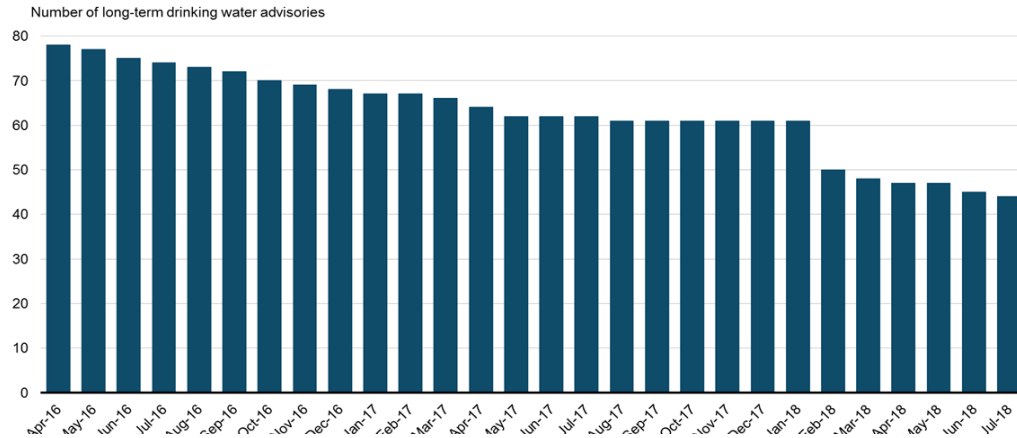


<https://www.sac-isc.gc.ca/eng/1506514143353/1533317130660g>

Sample Poster

Drinking Water Advisories on First Nations Reserves

<https://www.canada.ca/en/environment-climate-change/services/environmental-indicators/drinking-water-advisories-first-nations.html> Government of Canada 2019/05/09

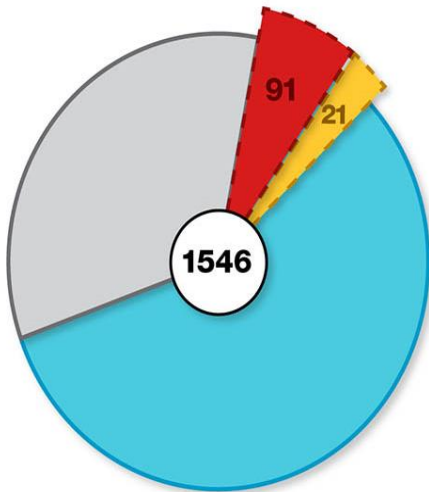


<https://www.canada.ca/en/environment-climate-change/services/environmental-indicators/drinking-water-advisories-first-nations.html>

In April 2016 there were 78 long term drinking water advisories.
In July 2018 34 of the advisories were removed



Drinking water systems on reserves.



- 1546** drinking water systems on reserve
- 499** systems serve commercial and other facilities
- 1047** public drinking water systems included in the commitment by Indigenous Services Canada.
- 91** systems with long-term drinking water advisories supported by Indigenous Services Canada
- 21** systems closely monitored to prevent long-term advisories

As of January 23, 2018

<https://www.aadnc-aandc.gc.ca/eng/1516741379405/1516741409130>

