

Grassy Narrows Study

Overview

Asubpeeschoseewagong First Nation, also known as Grassy Narrows, is an Ojibway community 80 km north of Kenora, Ontario, with just under 1,000 members who live there. During the 1960s and 1970s a pulp and paper mill contaminated the soil and the nearby English-Wabigoon river with mercury that has resulted in widespread poisoning of soil, animals and people. The full extent of the poisoning has only recently been fully acknowledged, though the community has been feeling the effects now for generations. In this study students will look at the science behind heavy metal poisoning and also the long-term effects it has on people and their culture. It will also examine how non-indigenous industry directly affects the lives of Indigenous people. This lesson will highlight how this community is closely connected to its environment, not just physically but mentally and spiritually, and look at ways of accessing voice from that community.

Expectations list by grade

The expectations as listed here are in numerical order. The teacher should emphasise those expectations that best fit their classroom and their course overall. While all expectations fit the activity and learning, this work can be expanded on as needed based on the teachers existing units, and lessons. It is suggested that expectation B2.4 be considered as the core expectation to frame the work for students and to anchor assessment and evaluation tools.

Grade 9 Academic SNC1D

- B1. assess the impact of human activities on the sustainability of terrestrial and/or aquatic ecosystems, and evaluate the effectiveness of courses of action intended to remedy or mitigate negative impacts
- B1.1 assess, on the basis of research, the impact of a factor related to human activity that threatens the sustainability of a terrestrial or aquatic ecosystem [IP, PR, AI, C] (For example look at how heavy metals become condensed through the natural order of the food chain in predatory species)
- B1.2 evaluate the effectiveness of government initiatives in Canada (federal, provincial, municipal), and/or the efforts of societal groups or non-governmental organizations, such as Aboriginal communities, environmental groups, or student organizations, with respect to an environmental issue that affects the sustainability of terrestrial or aquatic ecosystems [AI, C]
- B2. investigate factors related to human activity that affect terrestrial and aquatic ecosystems, and explain how they affect the sustainability of these ecosystems (The Grassy Narrows example here should demonstrate how the activities of a company in the 1960s have continuously effected ecosystems and a community dependent on that ecosystem until today)

- B2.1 use appropriate terminology related to sustainable ecosystems, including, but not limited to: bioaccumulation, biosphere, diversity, ecosystem, equilibrium, sustainability, sustainable use, protection, and watershed [C]
- B2.4 plan and conduct an investigation, involving both inquiry and research, into how a human activity affects water quality and, extrapolating from the data and information gathered, explain the impact of this activity on the sustainability of aquatic ecosystems [IP, PR, AI, C]
- B2.5 analyse the effect of human activity on the populations of terrestrial and aquatic ecosystems by interpreting data and generating graphs [PR, AI, C] (This expectation should be core to the research work that students are conducting. When possible, teachers should make explicit connections to other course work where this skill can be used: geography and math for example are grade specific connections that can be made.)
- B3. demonstrate an understanding of the dynamic nature of ecosystems, particularly in terms of ecological balance and the impact of human activity on the sustainability of terrestrial and aquatic ecosystems as it relates to the community or communities that are discussed during this unit.
- B3.5 identify various factors related to human activity that have an impact on ecosystems and explain how these factors affect the equilibrium and survival of ecosystems

Grade 10 Applied SNC2P

- B1.2 evaluate the effects that use of or the exposure to a technology, substance, or environmental factor may have on the function of human tissues, organs, or systems [AI, C] (In this specific example look at the technology behind the process of making paper and how a non-toxic product, paper, has a toxic effect due to production. This should help students understand the very real need for recycling and reduction of paper products.)
- C1. analyse how chemical reactions are employed in common products and processes, and assess the safety and environmental hazards associated with them
- C1.1 analyse, on the basis of research, the function of chemical reactions in the production of selected products and/or in processes commonly encountered at home or in the workplace and communicate their findings [IP, PR, AI, C]
- C1.2 identify practical applications of chemical reactions in a particular profession, and assess the associated hazards, including hazards associated with the handling and disposal of chemicals [PR, AI, C]

Assessment for Learning

As expressed in the pedagogy section earlier, assessment here should be about questioning and supporting students to make connections between science facts and their implications on real people and communities. Teachers should look to push students beyond the initial findings of the basic science, that is the immediate effects of heavy metal poisoning, and to look at the long-term effects on the environment and the community that is a part of it. Look for opportunities to correct through conversations and observations with students, but also encourage them to explore their ideas and help them to interrogate their initial ideas and beliefs. You might even allow for journaling or note taking to see how ideas change as students push their thinking and question their own conclusions. This assignment allows for connections to multiple strands of various grades of science curriculum and lends itself well to an authentic and engaging project for evaluation.

Inquiry Method:

This study can act as a direct connection to environmental issues that affect Indigenous communities in your immediate area and should be used as an entry point to examining how this plays out in different places, whether it is pressure on fish populations from commercial and tourism fishing activities to the damaging of the water table due to mining. These sorts of encounters between Indigenous communities and nearby industries can be examined in many places throughout Ontario and Canada. There is an opportunity to explore reciprocity and look at the responsibilities of non-Indigenous people and businesses to be respectful of the land and people they affect with their actions. There are also opportunities here to explore ways of working in concert with Indigenous communities and to make use of the environment in a cooperative way as opposed to a coercive way. When time is available, there is an opportunity with this unit to look at other non-toxic products and see if their production process is toxic or damaging. It also offers a chance to look at other methods of producing paper that are not damaging to the environment.

Learning Goals:

Although some of the resources here come from non-Indigenous media to help summarize the history of the situation and act as primers for students, there are also videos from the community that include their voices about who they are. These voices from the community should be held as a preferred source when trying to understand what is happening to them and how the effects of the mercury poisoning are affecting them.

At the end of this study students will be able to:

- explain how the use of chemicals and their disposal have direct effects on the environment and the people who inhabit them
- explain how the actions of an industry has directly affected the sustainability of earth and water ecosystems
- identify the factors of a human activity that have impacted the equilibrium of an ecosystem and the culture attached to it

Minds on:

[Grassy Narrows mercury victims up to 6 times more likely to have debilitating health problems, report says](#)

[Ontario knew about Grassy Narrows mercury site for decades, but kept it secret](#)

Have students read through the articles on Grassy Narrows. Discuss with them the effects of mercury poisoning that they are reading about. What are they and how does it work within the human body. At this point, also have them discuss what effects this poisoning is having on the community as a whole. This is a good time to capture initial thoughts and ideas from students about what they are thinking and feeling about this topic. (30 mins – 45 mins)

Activities

1. Work with students through the known effects of heavy metals on ecosystems and their effects in people. Students should be looking at mercury in particular and discovering what it is and where it is used. What are the particular attributes of the element that make it unique and where does it occur naturally in the world and in what concentrations. **(30-45 minutes)**
2. Have students look at the use of mercury in various industries. What chemical reactions does it play a part in and why would it appear in the production of paper. Ask students why might a company dispose of mercury in the ground or the water nearby and have them consider the economic pressures that might lead a person to make this decision. **(30 mins)**
3. Work with students to examine how heavy metals work through an ecosystem. Look at the dynamic nature of ecosystems, and the equilibrium required for their survival. This is a good point to examine the food chain and how elements become concentrated in certain animals and ultimately people. **(1-2 classes)**
4. Return again to the opening articles and look at the effects on the community. Show students [N'we Jinan Artists - "HOME TO ME"](#). What expressions of pride do they hear and see in this video for community from young people in Grassy Narrows. Have students consider how this idea of pride in community connects to their own community and what this type of poisoning would mean for them and their loved ones. **(45 mins)**
5. At this point there are a couple of options that you can pursue with students. You can look further at the effects of the mercury poisoning on the community and the larger social problems that have come out of it in [this CBC article](#). It also might be helpful to view this [interview from APTN](#) with David Suzuki about the poisoning of the river and the people and his organization's response to it. Students can then examine the Ontario government's response to the situation and evaluate its effectiveness. **(1 to 2 classes)** Another approach is to break away from the discussion of Grassy Narrows and make connections with a local Indigenous community. This is a time when teachers can reach out to the community and invite a member to come into the

classroom to talk about environmental pressures from local industries and how they directly affect the community. **(1 class)** There is an opportunity at this point to assess, the impacts of human activity that threatens the sustainability of a local terrestrial or aquatic ecosystem.

Consolidation:

As stated above this study really lends itself to a larger and engaging project that could include a presentation, website creation, video, or other communication tool that includes reflection on initial hypothesis and ideas and demonstrates growth of learning based on evidence and deeper level questioning. It is important for students to understand what the learning in this study means for their own communities, and for them to be aware of how the various industries in their own areas affect them and other nearby communities. Are the effects of these things shared equally or are some communities more susceptible to problems?

Additional resources to support learning:

The following two links are to just two current developments that are happening now. In both cases there are developments being pursued by non-Indigenous communities or businesses that might directly affect First Nations.

1. [Georgina Island residents raise concerns over proposed sewage plant](#)
2. [Red Moon Resources hoping to mine gypsum in Flat Bay this year](#)

Looking at the lessons learned from Grassy Narrows what sorts of questions and concerns do these communities express. What can students as non-Indigenous people do to support the communities and their concerns.