

WALKING WITH PLANTS

TRUTH 'N' FOOD

THE WATER WALKER

CURRICULUM RESOURCE



PRESENTED BY



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Foundation

CURRICULUM BY

Mrs. Krista LeBlanc

IB Biology HL
Biology 11/12
Food Science 12

WALKING WITH PLANTS

A SHORT BY TREVOR DIXON BENNETT AND STYAWAT/LEIGH JOSEPH
2020 | CANADA | 24 MINUTES | [TRAILER](https://www.walkingwithplants.ca/) (https://www.walkingwithplants.ca/)

TEACHER'S GUIDE

This curriculum resource will guide teachers and students to enrich their viewing experience of the short documentary film *Walking With Plants*. This resource is designed to help teachers frame discussions with their class, with classroom viewing activities for the film as well as an assignment relating to the themes of the film that can be completed after viewing.

ABOUT THE FILM

Styawat/Leigh Joseph is a Skwxwú7mesh Nation ethnobotanist. She grew up away from her traditional territory of Squamish, B.C. but in coming to a deeper understanding of her identity as a Skwxwú7mesh woman, felt called to move her family home.

As she navigates walking between academic and cultural worlds, she contemplates her relationship with plants and their role as teachers. On the land where her ancestors have harvested since time beyond memory, her life purpose is awakened.

Source: <https://www.walkingwithplants.ca/>



ABOUT THE FILMMAKERS

Trevor Dixon Bennett is a filmmaker, based in Victoria, BC, Canada. Bennett specializes in documenting and communicating the intersection of culture and the environment. Holding a Masters degree in Environmental Studies specializing in Ethnoecology, Bennett started Kingtide Films in 2015.

Leigh Joseph (ancestral name Styawat) is a Skwxwú7mesh Nation ethnobotanist and entrepreneur contributing to cultural knowledge renewal of Indigenous plant foods and medicines. Ethnobotany is the study of the relationships between people and plants. Through teaching workshops, university courses, and land-based learning opportunities, Leigh aims to expand the renewal of ethnobotanical knowledge and the healing that comes from this connection to place through ancestral ways of knowing.

Source: <https://www.walkingwithplants.ca/>

SCIENCE 7 (FROM THE [RENEWED NS CURRICULUM SCIENCE 7 GUIDE](#))

OUTCOMES
Learners will implement an environmental stewardship plan
Students will analyse the interconnectedness of biotic and abiotic components in nature, inclusive of Mi'kmaq perspective

SCIENCE 10 STUDENTS WILL BE EXPECTED TO...

CHAPTER	OUTCOME STATEMENT
Sustainability	<ul style="list-style-type: none"> Question and analyze how a paradigm shift in sustainability can change society's views (114-1)
Sustainability of an Ecosystem	<ul style="list-style-type: none"> Distinguish between biotic and abiotic factors, determining the impact on the consumers at all trophic levels due to bioaccumulation, variability, and diversity (318-2, 318-5)
	<ul style="list-style-type: none"> Describe how the classification involved in the biodiversity of an ecosystem is responsible for its sustainability (214-1, 318-6)
	<ul style="list-style-type: none"> Predict and analyze the impact of external factors on the sustainability of an ecosystem, using a variety of formats (212-4, 214-3, 331-6)
	<ul style="list-style-type: none"> Diagnose and report the ecosystem's response to short-term stress and long-term change (213-7, 215-1, 318-4)
STSE and Sustainable Development	<ul style="list-style-type: none"> Describe how different geographical locations can sustain similar ecosystems (331-7, 318-3)
	<ul style="list-style-type: none"> Identify, investigate, and defend a course of action on a multi-perspective social issue (118-9, 215-4, 118-5)
	<ul style="list-style-type: none"> Identify and describe peer review, Canadian research, and global projects where science and technology affect sustainable development (114-5, 116-1, 117-3, 118-1)

MI'KMAW STUDIES 11

CHAPTER	OUTCOME STATEMENT
Culture 3	<ul style="list-style-type: none"> Demonstrate an understanding of the importance of the roles Mi'kmaq Elders continue to have in maintaining cultural values.
Culture 4	<ul style="list-style-type: none"> Explore traditional and contemporary expressions of Mi'kmaq art, crafts, music, dance, and literature.
Spirituality 1	<ul style="list-style-type: none"> Demonstrate an understanding of the beliefs, customs, and values of traditional Mi'kmaq spirituality.

VISUAL ARTS 11 STUDENTS WILL BE EXPECTED TO...

GENERAL OUTCOME	OUTCOME STATEMENT
Creating, Making, and Presenting	<ul style="list-style-type: none"> • CM 1.2 explore intrinsic properties of art media to express specific intent • CM 1.3 sustain a concept through diverse approaches and art media • CM 1.5 refine the art-making process through personal skill development from concept to finish • CM 2.1 investigate, create, and employ signs and their signifiers (symbols) to communicate contemporary issues and/or personal meaning through a variety of media • CM 2.3 make critical and articulate judgments when collaboratively sorting, arranging, and displaying artworks CM 2.4 encourage peers to express individual approaches to and opinions of aesthetic forms in collaborative learning environments
Understanding and Connecting Contexts of Time, Place, and Community	<ul style="list-style-type: none"> • UC 3.1 reflect on the impact that an everyday visual context has on personal expression • UC 3.2 explore the links between visual arts and the student's personal environment • UC 3.3 continue to develop an understanding of how visual arts contribute to the creation of culture • UC 3.4 actively engage in art advocacy • UC 3.5 investigate the ways in which artists explore social and artistic issues • UC 3.6 give voice to personal concerns through visual expression • UC 4.1 explore and share a developed appreciation for the diversity of art and artifacts from individuals and various cultures • UC 4.2 incorporate in their personal artwork visual images that are inspired by a variety of cultural, socio-economic, and national origins • UC 4.3 articulate through various texts how artists and the arts inform, define, and cause us to question and reflect • UC 4.4 analyze personal understanding of how individual and societal values affect their own response to visual arts • UC 4.6 recognize and respond to artworks from different cultures and periods • UC 5.1 create artwork that is informed by other arts disciplines • UC 5.2 analyze and demonstrate an understanding of how personal, social, cultural, and physical environments interact • UC 5.3 generate artwork that demonstrates an understanding of the elements of art and principles of design as they exist in art and in the natural and built environments
Perceiving and Responding	<ul style="list-style-type: none"> • PR 6.2 continue to engage in the critical process to develop informed, aesthetic responses • PR 6.3 recognize strategies by which visual art and design problems can be resolved • PR 8.1 recognize the evolving interaction between a concept and its execution in personal artwork and the works of others • PR 8.2 demonstrate an awareness of how consideration of the intended audience affects and impacts on an artwork

BIOLOGY 11 STUDENTS WILL BE EXPECTED TO...

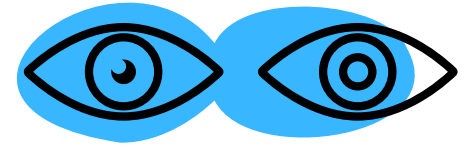
UNIT	OUTCOME STATEMENT
Maintaining Dynamic Equilibrium I	Homeostasis: <ul style="list-style-type: none"> • Explain the importance of nutrition and fitness to the maintenance of homeostasis, debating the merits of funding specific scientific or technological endeavours and not others (117-4, 317-3) • Explain, with specific examples, how behaviours such as tropisms, instinct, and learned, help to maintain homeostasis and identify multiple perspectives that influence a decision/issue (215-4, 317- 8)
Biodiversity	Classifying Living Things: <ul style="list-style-type: none"> • Analyze and describe examples where scientific knowledge evolved, was enhanced, or revised as a result of new laws, theories, and/or technologies (115-7, 116-2) Diversity Among Living Things: <ul style="list-style-type: none"> • Construct arguments to support a decision or judgment, using examples and evidence, recognizing various perspectives (118-6) • Describe the anatomy and physiology of a representative organism from each kingdom, including a representative virus (316-6)

INTRODUCTION

Within both Biology 11 and Biology 12 there is a central theme titled “Maintained Dynamic Equilibrium”. Biology 11 leads into Biology 12 with an understanding that there are dynamic moving interactions between populations and the environment and internally within the body systems and the person as a whole. The units centering around Ecology look at patterns and distributions of all organisms on Earth.

Students learn about ecological ordering of living things, and witness the cascade of how one population change can affect the entire hierarchy. The world is out of balance, and climate change is a reality. The students in our current classrooms are faced with a crippling reality that due to human greed, and a lack of appreciation for Mother Earth, we are on a frightening trajectory of global warming.

Etuaptmumk (two-eyed seeing) offers a welcomed breath of relief into our classrooms as we teach about sustainability. The Western traditional framework of quantitative science is not enough to help us out of the climate mess we have created. We need to listen to Canada’s Mi’kmaw Elders and bring the knowledge of Netukulimk into our classrooms so that holistic practices and policies can help heal our Oceans, land and all of its inhabitants. The lessons below consider the unit outcomes from Science 10, Biology 11 STSE (Science, Technology, Society and Education), Mi’kmaw 11, and Visual Arts 11 in an effort to further develop global citizenship and scientific literacy.



BEFORE VIEWING THINKING ACTIVITY 1 (INDIVIDUAL REFLECTION):

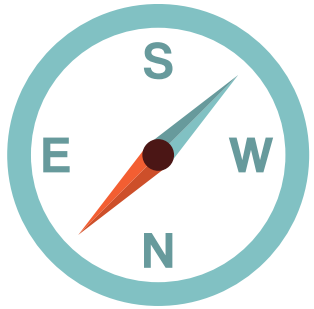
Walking with Plants is a short film about a woman, science, identity and culture. Before viewing the film, think about the following questions:

- 1) Where do you feel most connected with your identity?
- 2) What memories or experiences do you have walking with plants?
- 3) Where is home for you?



BEFORE VIEWING THINKING ACTIVITY 2 (CLASS ACTIVITY):

The film *Walking With Plants* has recurring themes of connection and belonging with the land. Filmed in Squamish, B.C. the imagery of the film is breathtaking and rich. As a class activity prior to viewing the film, the class can break into multiple groups or complete this activity individually or as a full class. The questions below are taken from a larger "Big Here Quiz"; you can check the entire quiz through [this link](https://kk.org/cooltools/the-big-here-qu/) (https://kk.org/cooltools/the-big-here-qu/). Students should not use the internet to assist them but rather should tap into the collective wisdom of the class. **How well do we know the land and where we are?**



- 1) Point north.
- 2) What time is sunset today?
- 3) Where does the water in our school fountain come from? Which watershed is associated with our school?
- 4) How many feet above sea level are we?
- 5) What Spring wildflower is among the first to bloom close to here?

- 6) Is the soil under our feet more clay, sand, rock or silt?
- 7) Who lived on this land prior to us? What did the previous inhabitants eat? How did they sustain themselves?
- 8) Name 5 edible indigenous plants in our school area and when they are available.
- 9) From which direction do storms normally come to our community?
- 10) Point to where the sun will set tonight.
- 11) How many days is the growing season from frost to frost here?
- 12) Name 5 birds that live here. Which are migratory and which ones stay put for winter?
- 13) How much rainfall did we get here last year?
- 14) Where is the nearest wilderness? When was the last time a fire burned through it?
- 15) What plant was dominant on the land here 10,000 years ago?



PRE-VIEWING ACTIVITY 1: Etuaptmumk (two-eyed seeing) is a welcomed paradigm in our classrooms as students learn about sustainability. When we see with both eyes in Science, we have data that is much richer than if we work with solely one perspective. We need both the qualitative and quantitative data as we interpret our findings. We need the numbers and the stories if we are going to plan and make decisions that affect our grandchildren. As we listen to Canada’s Mi’kmaw Elders and bring the knowledge of Netukulimk into our classrooms and blend the holistic practices and policies of Elders in our communities along with the knowledge of science, together we can help heal our Oceans, land and all of its inhabitants.

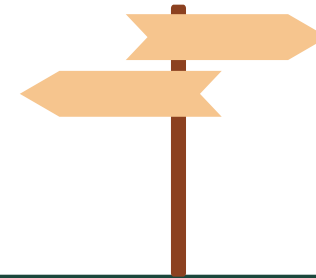


Take a moment to listen to East Coast Poet Laureate Rebecca Thomas as she speaks about Etuaptmumk.
Video link: <https://www.youtube.com/watch?v=bA9EwcFbVfg>

As you listen to Rebecca Thomas speak, write your thoughts in the space below.

VIEWING ACTIVITY 1: During the film, answer the following questions.

1) Walking with plants features Styawat/Leigh Joseph, a Sḵwxwú7mesh Nation ethnobotanist. Raised away from her traditional territory of Squamish, B.C., Leigh uses her voice in the film to share her deepening understanding of her identity as a Sḵwxwú7mesh woman who studies plants. In the film you will meet Siyál Tenaat, who says “She [Styawat] truly walks on two paths.” What two paths does she walk on?



2) Ten minutes into the film, Leigh Joseph/Styawat states “*When I learn and practice, I need to share that with the youth.*” Why do you think it is important for plant knowledge and skills to be specifically taught to younger generations?



3a) The second portion of the film is poetic. Rich imagery floods the screen of plants that are native to British Columbia. We see images of cattail, silver weed, licorice fern, cottonwood, camas, salmonberry, stinging nettle, wild rose and amabilis fir. Use the website iNaturalist (<https://www.inaturalist.org/>) to select one of these plants and learn more about it. Where does it grow? Why should we be interested in this plant? Include a sketch of the plant.

3b) Now travel to the East Coast using the iNaturalist website and filter by plants that are native to Nova Scotia. Select a plant that grows on the East Coast and answer the same questions as in part (a): Where does it grow? Why should we be interested in this plant? Include a sketch of this plant.

4a) Briefly describe the PhD research work that Leigh Joseph/Styawat is conducting in part 3 of the film, "Research".



4b) How has your thinking about plants shifted as a result of learning about Leigh Joseph/Styawat's research? Do you think that we can use plants to help people with Type 2 diabetes?

5) Do you believe that consumerism is eroding culture? Why or why not?

6) There is a teaching within many indigenous cultures that talks about the Seven Generations. You can learn more about this concept by listening to Ron (Deganadus) McLester, Executive Director and Special Advisor to the Aboriginal Initiatives, Algonquin College.

Video link: <https://www.youtube.com/watch?v=PI-QMcXrMsY&t>

How does watching *Walking with Plants* and listening to the video link challenge our ideas and thinking about sustainability and climate change?

7) In the last section of the film, Leigh Joseph/Styawat talks about the importance of plants and ceremony. She makes the connection that her ancestors worked the same land as she walks in her research. As the film ends there is a theme that plants and land acknowledgement is an illustration of resilience, that there is responsibility not only for self but also for others and community in walking with plants and learning about sustainable practices. As a student, do you think that land-based workshops should be part of the curriculum taught in schools? Explain.

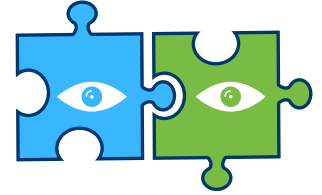
POST-VIEWING ACTIVITY 1: Recently news articles have been published about forest bathing. This concept was further explained in the CBC article *Prescribing nature: Research suggests the outdoors are good for your mental health*.

Article link: <https://www.cbc.ca/radio/thecurrent/the-current-for-sept-6-2021-1.6163980/prescribing-nature-research-suggests-the-outdoors-are-good-for-your-mental-health-1.6163985>

Read (or listen to the Current podcast, 23 minutes) about the importance of returning back to the land. **What physiological changes are doctors and researchers witnessing as a result of forest bathing? Is there a connection between nature and wellness?**

INTRODUCTION

Netukulimk is the relationship we have with one another and the environment as we aim to live in harmony. Consisting of three components: actions, beliefs and behaviours, it uses the living knowledge of the principles of sustainability, interconnectedness, spirituality and stewardship in connection with **Msit No'kmaq**; the belief that all living things are related. In this post viewing assignment we will focus on the power of observation and the hidden bias that is captured through personal observations. The aim of the project is to look with both eyes both figuratively and symbolically and to take the students outside to re-examine the school yard as we collect photographs with intention.



MATERIALS REQUIRED:

- Cell phone camera or traditional camera
- Internet
- Voice recorder
- QR code generator
- *Optional: A colour printer*

HELPFUL WEBSITES:

- Mi'kmaw Place Names - A Digital Map: <https://placenames.mapdev.ca/>
- Mi'kmaq Plants and their uses: <https://mikmaghistorymonth.ca/wp-content/uploads/2020/09/MHM-poster-2020-English.pdf>
- Asters and Goldenrods - Learning for a Sustainable Future: <https://resources4rethinking.ca/en/step-outside/nature-guides/page/mid-september-2021>
- Plant Watch: <https://www.naturewatch.ca/plantwatch/nova-scotia/>
- Nova Scotia Wild Flora Society: <http://nswildflora.ca/links/naturalization/>

INSTRUCTIONS

Prior to going on a nature walk with your class, show this film link from The Nova Scotia Art Gallery - Studio at Home production [Neighbourhood Photo Walk](#) by Yarmouth photographer, Adam Graham. As mentioned in the video clip, give an instruction to your students for the type of photos that you are hoping they will gather on the walk. Specifically you may ask they they only take photos of plants and that they use a specific distance away from the plant itself when they capture their photo. The goal is for them to become aware of the flora and fauna surrounding the school area. Perhaps they are looking closely at thistles, clover, dandelions, goldenrods or asters. Have students take multiple photos of what they see, and then when they return to the classroom they can narrow their collection down to 2-3 quality photographs. Allow students to use software to edit their photos. They will likely choose to add a filter and alter the exposure of the photograph. Once they are happy with their image, they can be given some time to research about the local plant they have discovered on their walk. There is a list of helpful resources above or you may have hard copy books in your classroom to assist with their research.



The goal is that they will discover interesting facts about their plant and also learn if there is specific knowledge about the plant that is helpful for humans. Using this knowledge they will then curate a digital recording of their voice explaining their findings. Lastly, they will generate a QR code that links to their voice recording. The photographs can be printed out and put up on display in a hallway or within the classroom. Likewise, the photographs can be used digitally with the Google Suite. The weaving of the photographs and the voice will curate a living wall for those who walk by to enjoy and learn from.



TRUTH 'N' FOOD: QUINAUTL INDIAN NATION

A SHORT BY TAUS SCHUMACHER AND JOHN GROD | AVAILABLE TO STREAM ON [YOUTUBE](#)
2020 | UNITED STATES | 32 MINUTES | [TRAILER](https://www.youtube.com/watch?v=UiHOC_fZGa0) (https://www.youtube.com/watch?v=UiHOC_fZGa0)

TEACHER'S GUIDE

This curriculum resource will guide teachers and students to enrich their viewing experience of the digital series episode *Truth 'N' Food: Quinault Indian Nation*. This resource is designed to help teachers frame discussions with their class, with classroom viewing activities for the film as well as assignments relating to the themes of the film that can be completed after viewing.

ABOUT THE FILM

As the flames reach high into the dark night, a simple meal cooks over the heat. The strangers, with unfamiliar tongues and customs, wait for their food to be ready, enjoying each other's company. No words are spoken, but an experience is shared.

Truth 'N' Food is a digital series that seeks out these stories related to the human experience around food and what truths we've forgotten in our long journey as a species.

In season 2 of *Truth 'N' Food*, join Chef Taus as he is invited on an extraordinary journey to the Quinault Nation to learn and share ancient and modern culinary culture with audiences.

Source: <https://www.truthnfood.com/bio>

ABOUT THE FILMMAKERS

Taus Schumacher first connected to nature and food as a young boy, foraging for berries and mushrooms at his family summer home in Sweden. Native to a small town outside of Copenhagen, Denmark, he later went on to dedicate more than twenty years of his life to culinary perfection. After tenure as head chef of The Royal Library and General Manager of both Lauras Bakery and Sticks N Sushi, Taus was confronted with a fork in the road; should he continue down the path as a respected chef in some of the best institutions in food-centric Copenhagen, or follow an inner voice telling him to get outdoors and reconnect with his passion for food that began as a boy? He decided on the path less traveled and it took him several thousand miles across the globe to the Pacific Northwest.

John Grod first experienced the magic of cinema as a child when the lights dimmed in a Southern California movie theatre and the iconic theme song to Indiana Jones and The Last Crusade, faded up. Captivated by the dreamlike escape provided by storytelling, he knew from this early age, that he wanted to be a filmmaker. After attending California State Long Beach Film School, John went on to work more than ten years in the film industry. But while working on major films and with A-list talent seemed glamorous, John sought a deeper connection to the human element of storytelling and moved North to Seattle in search of our shared experiences.

Source: <https://www.truthnfood.com/bio>

SCIENCE 7 (FROM THE [RENEWED NS CURRICULUM SCIENCE 7 GUIDE](#))

OUTCOMES
Learners will implement an environmental stewardship plan
Students will analyse the interconnectedness of biotic and abiotic components in nature, inclusive of Mi'kmaq perspective

SOCIAL STUDIES 7

OUTCOMES	INDICATORS
Learners will reflect on the impact of government policies and the denial of treaty rights on Mi'kmaq communities and individuals in Mi'kma'ki	<ul style="list-style-type: none"> • Question how the Indian Act and other government decisions impacted geographic conditions for Mi'kmaq people (CZ, COM, CT) • Analyse how the Indian Act and other government decisions impacted civic conditions for Mi'kmaq people (CZ, COM, CT) • Investigate how the Indian Act and other government decisions impacted economic conditions for Mi'kmaq people (CZ, COM, CT) • Investigate the resilience of the Mi'kmaq in response to discriminatory government policies and the denial of treaty rights (CZ, COM, CT)
Learners will reflect on historical opportunities and challenges in the Maritimes, inclusive of the Mi'kmaq, Acadians, African Nova Scotians, and the Gaels	<ul style="list-style-type: none"> • Evaluate the impacts of government attempts at assimilation and segregation on the Mi'kmaq, Acadians, African Nova Scotians and Gaels (CZ, COM, CT, TF)

FOOD SCIENCE 12

UNIT	OUTCOME STATEMENT
Food Constituents	Food Constituents: <ul style="list-style-type: none"> • 1.1 identify and describe science- and technology-based careers related to food science
Preservation Factors	Evolution of Food Preservation: <ul style="list-style-type: none"> • 2.6 explain practical methods of food preservation
Food Quality and Commodities	Food Commodities: <ul style="list-style-type: none"> • 3.1 analyze the properties of specific food commodities • 3.2 select and use different resources and materials to collect information about their commodity • 3.3 devise and conduct an experiment on their commodity
Food Packaging	Food Packaging and Food Labels: <ul style="list-style-type: none"> • 4.1 explain the functions and considerations for food packaging • 4.2 identify and explain the information required for labels on food products made in Canada • 4.3 design, develop, make, and present a food product identifying and anticipating major variables that may impact on the final quality of the product

MI'KMAW STUDIES 11

CHAPTER	OUTCOME STATEMENT
Culture 3	<ul style="list-style-type: none"> • Demonstrate an understanding of the importance of the roles Mi'kmaw Elders continue to have in maintaining cultural values.
Culture 4	<ul style="list-style-type: none"> • Explore traditional and contemporary expressions of Mi'kmaw art, crafts, music, dance, and literature.
Spirituality 1	<ul style="list-style-type: none"> • Demonstrate an understanding of the beliefs, customs, and values of traditional Mi'kmaw spirituality.

VISUAL ARTS 11

UNIT	OUTCOME STATEMENT
Creating, Making and Presenting	<ul style="list-style-type: none"> • CM 2.4: Encourage peers to express individual approaches to and opinions of aesthetic forms in collaborative learning environments
Understanding and Connecting Contexts of Time, Place, and Community	<ul style="list-style-type: none"> • Outcome 3: Demonstrate critical awareness of and value the role of the arts in creating and reflecting culture • Outcome 4: Respect the contributions of individuals and cultural groups to the arts in local and global contexts and value the arts as a record of human experience and expression • Outcome 5: Examine the relationships among the arts, societies, and environments • UC 4.1: Explore and share a developed appreciation for the diversity of art and artifacts from individuals and various cultures

BIOLOGY 11 STUDENTS WILL BE EXPECTED TO...

UNIT	OUTCOME STATEMENT
Maintaining Dynamic Equilibrium I	<p>Homeostasis:</p> <ul style="list-style-type: none"> • Explain the importance of nutrition and fitness to the maintenance of homeostasis, debating the merits of funding specific scientific or technological endeavours and not others (117-4, 317-3) • Explain, with specific examples, how behaviours such as tropisms, instinct, and learned, help to maintain homeostasis and identify multiple perspectives that influence a decision/issue (215-4, 317- 8)
Biodiversity	<p>Classifying Living Things:</p> <ul style="list-style-type: none"> • Analyze and describe examples where scientific knowledge evolved, was enhanced, or revised as a result of new laws, theories, and/or technologies (115-7, 116-2) • Describe and apply classification systems and nomenclatures used in the biological science (214-1) • Use organisms found in local or regional ecosystems to demonstrate an understanding of the fundamental principles of taxonomy (316-5) <p>Diversity Among Living Things:</p> <ul style="list-style-type: none"> • Construct arguments to support a decision or judgment, using examples and evidence, recognizing various perspectives (118-6) • Describe the anatomy and physiology of a representative organism from each kingdom, including a representative virus (316-6)

OCEANS 11

UNIT	OUTCOME STATEMENT
Marine Biome	Life in the Oceans: <ul style="list-style-type: none"> Explain the marine biome and describe the biodiversity of ocean life and determine interconnections that exist within the marine biome (MBIO-1)
	Habitats: <ul style="list-style-type: none"> Compare representative marine organisms and communities (MBIO-2)
	The Field Trip: <ul style="list-style-type: none"> Develop and report appropriate sampling procedures to obtain quantitative data on the abundance of marine organisms at a local coastal area and describe and apply classification systems and nomenclatures to organisms found in the marine biome (MBIO-4)
Coastal Zones	Identifying Coastal Zones: <ul style="list-style-type: none"> Discuss the concept of coastal zones and how these vary around the world (CZON-1)
	Variations in Coastal Zone Structure and Properties: <ul style="list-style-type: none"> Describe and explain the causes and characteristics of major types of coastal zones (CZON-2)
	The Importance of Coastal Zones to Humans: <ul style="list-style-type: none"> Identify and explain sustainability and human use of an environment, including populations and resources, locally and globally (CZON-3)
	Keeping our Coastal Zones: <ul style="list-style-type: none"> List and discuss human interactions with the processes involved in the coastal zone environment, and describe competing views (CZON-4) Discuss the purpose and process of integrated coastal zone management and analyze a coastal zone management structure and the interrelationships found in a local area (CZON-5)
Aquaculture	Farming, Fishing, and Food: <ul style="list-style-type: none"> Identify, and compare aquaculture locations and species grown in Nova Scotia, in the rest of Canada, and globally (AQUA-1)
	What Species? Where? Why? <ul style="list-style-type: none"> Describe and identify groups of organisms raised through aquaculture and their geographic locations, referring to anatomy and physiology of a major species and ecology of cultured species (AQUA-2)
	Water Quality: <ul style="list-style-type: none"> Describe, measure, and analyze conditions for aquaculture operations (AQUA-3)
	Site Acceptance by the Community: <ul style="list-style-type: none"> Analyze site planning from various perspectives and report on both the risks and benefits to society and the environment (AQUA-4)
	Marketing the Product: <ul style="list-style-type: none"> Identify, analyze, and evaluate various aquaculture business opportunities (AQUA-5)
	Aquaculture-Related Issues: <ul style="list-style-type: none"> Explain aquaculture-related issues (AQUA-6)

OCEANS 11

UNIT	OUTCOME STATEMENT
Fisheries	Fisheries are a Unique Resource: <ul style="list-style-type: none"> Explain the importance of a sustainable fishery as a resource to global and local food supply and employment with reference to terminology (FISH-1)
	Life Cycle: <ul style="list-style-type: none"> Describe, identify, and analyze the external and internal anatomy of a major finfish or shellfish species that is part of the commercial fishery (FISH-2)
	Models of Fish Stocks: <ul style="list-style-type: none"> Construct, interpret, and evaluate various ecological factors (FISH-3)
	Fish Population and Management: <ul style="list-style-type: none"> Compile and organize fish population data and explain the dynamic interrelationships among the physical environment, the biological environment, and the health and distribution of a fish stock (FISH-4)
	Technology in the Fisheries: <ul style="list-style-type: none"> Compare the risks and benefits to society and the environment of applying scientific knowledge or introducing a technology to the fisheries (FISH-5)
	What Does Management Mean? <ul style="list-style-type: none"> Identify, describe, and analyze multiple perspectives of the main organizations in research and decision making in fisheries management in Canada (FISH-6)

INTRODUCTION: WE ARE ALL TREATY PEOPLE

Treaty education is a tool to engage Canadians as we work together towards reconciliation. Reconciliation will take many generations but it is through listening and learning that we can begin to build a better Canada. Treaties were a significant building block for Nova Scotia and Canada and we all have benefited from them. The documentary *Truth 'N' Food* opens on the Pacific Coast of the USA as we meet the Quinault People. Although the film showcases the West Coast, you will find there are many connections between the film and the Mi'kmaq people of Nova Scotia. Prior to viewing the film you may find it helpful to watch the Nova Scotia Treaty Education video "We are all Treaty People".

Link: <https://www.youtube.com/watch?v=TePIVr2bgCY>

VIEWING ACTIVITY 1: As the film opens we meet Chef Taus Schumacher from Denmark and Titus, an Indigenous young adult who leads us on a journey through the Quinault Nation. As we learn about Titus, we learn about the importance of adopting a gift economy mindset so we can protect the resources of earth. As you listen to the documentary you will learn many ways we can protect our resources through shifting our mindset from consumerism to one of a gift economy.

1) As you listen to Titus, in the space below write the constructive ways that he mentions we can protect the Earth's resources.

2) How are the lives of the Quinault people influenced by geographic location?

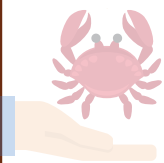
3) Explain how Titus prepares the crab he has caught for the film's narrator. If you forget, you can return and watch the trailer for the film.

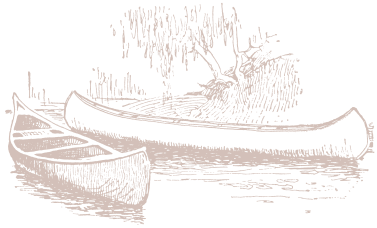
Link: https://www.youtube.com/watch?v=UiHOC_fZGa0

4) How did the denial of Treaty Rights impact the economic opportunity of the Quinault people?

5) How did the Quinault people create economic opportunities for themselves?

6) What is the role of food in reconciliation?





7) Titus takes us on a journey through his land. We visit Guy, a man working on a dugout canoe and totem pole from the same tree that lived more than 1000 years!

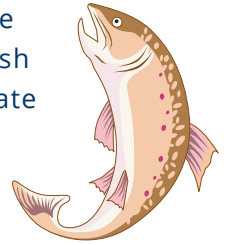
a) How did canoes help the Quinault Nation?

b) Guy shares his art and explains the significance of the images he has carved into the totem pole. What symbols has Guy included in the design of his work? For each symbol you mention, explain the significance of it being included in the carving.

8) What role does Titus play in helping to heal the Quinault Nation?

9) After visiting Guy, Titus takes us back to his home where he makes "indian tacos". What commodities are used to build this incredible dish?

10) Halfway through the film we are taken to an innovative fishery on Lake Quinault. We will listen to broodstocker/fish whisperer David James Jr. as he discusses the role of climate change on the salmon population in the lake.



a) How is the Quinault National Fish Hatchery improving salmon stock?

b) What does David James Jr. tell us about salmon genetics in the lake?

c) What reason does David James Jr. give for the sharp decline in salmon?

d) What is bycatch?

e) Why does David James Jr. love his job?

f) Why do they release the female salmon from their nets?

g) How does the Quinault National Fishery respect the lifecycle of the salmon? What is done to prevent the salmon from being stressed?

11) There are no restaurants in Quinault Nation, but they do have a company, The Quinault Pride Seafood Company (QPS) that makes hand crafted boxes and cans of salmon. The QPS Company harvests their salmon using a set net. You can use this link to learn more about treaty fishing rights and how the gear is used using this link: <https://wdfw.wa.gov/fishing/tribal/net-schedules#about>

a) How does the company fish in a sustainable way?

b) How are the king salmon and smoked razor clams canned?

c) How similar are the fish smoking traditions between the Danish people and the Quinault people?

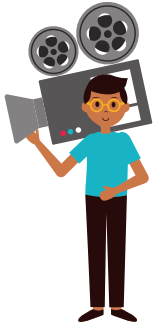


12) What does Titus tell us about the meaning of the translation of the Quinault name? What riches does the Quinault Nation have?



13) How can the teachings of Msit No'kmaq and Netukulimk teach us about the Mi'kmaw connection to the land? Do we hear similar threads to these beliefs as Titus takes us on a tour of the Quinault Nation?

ASSIGNMENT 1: COMPANY IS COMING!



Chef Taus Schumacher and his film crew are coming to film the next episode of Truth 'N' Food at your school. Your teacher has selected your group to be the perfect spokespeople for the film's narrative. Your group is aware that if you are selected for the film, you will receive praise, support and funding for your project by the TV network.

PART 1: As a group you will build a concept map/brainstorm and work together to select a recipe that you feel best showcases the local resources that are commonly available where you live.

PART 2: After you have decided on the commodity crop that you are going to showcase, you will build your pitch! Locate the recipe, preparation instructions and look up how the commodity crop helps your local economy.

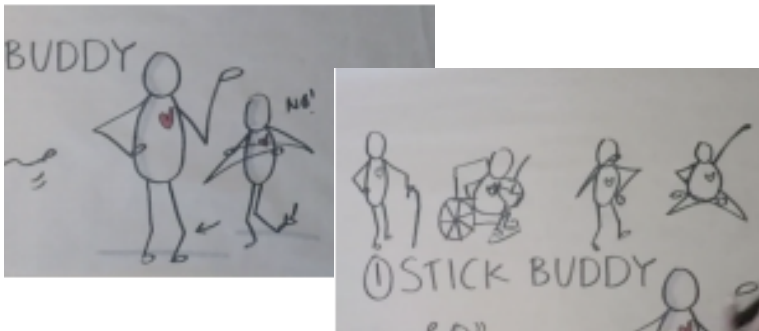
- What would you like Chef Taus to know about the relationship your group has with food in your local area?
- Is the commodity that you picked harvested in a sustainable way?
- Are there improvements that can be made to the local area so that you incorporate the teaching of Netukulimk in your area?
- What would a cash infusion to your local area do to promote this local commodity for others?

ASSIGNMENT 2: VISUAL STORYTELLING

In this post film activity, students will be introduced to the concept of visual storytelling. The Art Gallery of Nova Scotia features a helpful series called "Studio from Home" that gives step by step instructions for online learners. One of the videos "Visuals for Big Ideas: Using Graphics for Storytelling" by artist Chenise Hache is excellent.

Link: <https://www.youtube.com/watch?v=9FuJZpDtZrk>

Visual storytelling is a way for students to show their thinking in simple ways using graphics. With the help of Indigenous graphic artist, Chenise Hache we will participate in a video tutorial of how to use graphic "buddies" to help us illustrate big ideas and stories from our perspective and also the perspective of those who may be unable to use their voice.



- 1) Watch the clip of Chenise Hache demonstrating how to build a visual storyboard.
- 2) Obtain large paper and a few markers and begin to create your buddies.
- 3) You may want to include the word **RECIPROCITY** in your banner on your board. As you watch the film, Titus gives many examples of reciprocity within the Quinault Nation. Perhaps you would like to include examples from the film or you are able to think about reciprocity within your community. Other examples could include visual storytelling surrounding the word Etuaptmumk, Sustainability or Msit No'kmaq.

THE WATER WALKER

A SHORT BY JAMES BURNS | AVAILABLE TO STREAM ON CRAVE (SUBSCRIPTION REQUIRED)
2020 | CANADA | 14 MINUTES | TRAILER (<https://www.walkingwithplants.ca/>)

TEACHER'S GUIDE

This curriculum resource will guide teachers and students to enrich their viewing experience of the short documentary film *The Water Walker*. This resource is designed to help teachers frame discussions with their class, with classroom viewing activities for the film as well as assignments relating to the themes of the film that can be completed after viewing.

ABOUT THE FILM

This documentary follows teenaged Anishinaabe water activist Autumn Peltier as she travels to the UN to preserve the future of Indigenous communities.

Autumn Peltier is a 15-year-old Anishinaabe clean-water activist from Wiikwemkoong Unceded Territory on Manitoulin Island, Ontario, Canada. Peltier has been nominated three times for the International Children's Peace Prize and continues to fight for Indigenous communities around the world.

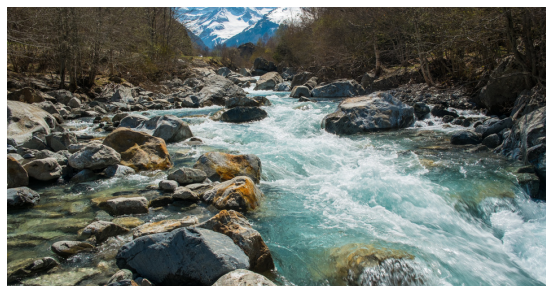
Autumn Peltier has become a powerful advocate for clean drinking water in Indigenous communities around the world. The Water Walker documents Peltier's powerful journey from Wiikwemkoong Unceded Territory to New York City as she prepares to speak in front of the United Nations with the hope of preserving the future of Indigenous communities for generations to come.

Source: <https://tiff.net/events/the-water-walker>

ABOUT THE FILMMAKERS

James Burns is an American director and a 2020 Sundance Institute Fellow. His documentary work has been selected for Netflix, Vice, The Atlantic, and NPR. In addition to filmmaking, he dedicates time to mentoring incarcerated youth and hopes to provide young people with tools to empower themselves.

Source: <https://tiff.net/events/the-water-walker>



SCIENCE 7 (FROM THE RENEWED NS CURRICULUM SCIENCE 7 GUIDE)

OUTCOMES	INDICATORS
Learners will implement an environmental stewardship plan	<ul style="list-style-type: none"> Select strategies for conservation and sustainability (CZ/CT) Investigate community environmental stewardship initiatives (CZ/COM/PCD/CT) Formulate an environmental stewardship plan to mitigate environmental harm in relation to the concept of Netukulimk (CZ/PCD/CI/CT)
Learners will evaluate and plan ways to mitigate environmental harm as well as how they can have a positive impact on their community and environment	
Students will analyse the interconnectedness of biotic and abiotic components in nature, inclusive of Mi'kmaq perspective	

SCIENCE 10

CHAPTER	OUTCOME STATEMENT
Sustainability	<ul style="list-style-type: none"> Question and analyze how a paradigm shift in sustainability can change society's views (114-1)
Sustainability of an Ecosystem	<ul style="list-style-type: none"> Distinguish between biotic and abiotic factors, determining the impact on the consumers at all trophic levels due to bioaccumulation, variability, and diversity (318-2, 318-5)
	<ul style="list-style-type: none"> Predict and analyze the impact of external factors on the sustainability of an ecosystem, using a variety of formats (212-4, 214-3, 331-6)
	<ul style="list-style-type: none"> Diagnose and report the ecosystem's response to short-term stress and long-term change (213-7, 215-1, 318-4)
STSE and Sustainable Development	<ul style="list-style-type: none"> Describe how different geographical locations can sustain similar ecosystems (331-7, 318-3)
	<ul style="list-style-type: none"> Identify, investigate, and defend a course of action on a multi-perspective social issue (118-9, 215-4, 118-5)
	<ul style="list-style-type: none"> Identify and describe peer review, Canadian research, and global projects where science and technology affect sustainable development (114-5, 116-1, 117-3, 118-1)

BIOLOGY 11 STUDENTS WILL BE EXPECTED TO...

UNIT	OUTCOME STATEMENT
Biodiversity	<p>Classifying Living Things:</p> <ul style="list-style-type: none"> Analyze and describe examples where scientific knowledge evolved, was enhanced, or revised as a result of new laws, theories, and/or technologies (115-7, 116-2) <p>Diversity Among Living Things:</p> <ul style="list-style-type: none"> Construct arguments to support a decision or judgment, using examples and evidence, recognizing various perspectives (118-6)

MI'KMAW STUDIES 11

CHAPTER	OUTCOME STATEMENT
Culture 3	<ul style="list-style-type: none"> • Demonstrate an understanding of the importance of the roles Mi'kmaw Elders continue to have in maintaining cultural values.
Culture 4	<ul style="list-style-type: none"> • Explore traditional and contemporary expressions of Mi'kmaw art, crafts, music, dance, and literature.
Spirituality 1	<ul style="list-style-type: none"> • Demonstrate an understanding of the beliefs, customs, and values of traditional Mi'kmaw spirituality.

VISUAL ARTS 11 STUDENTS WILL BE EXPECTED TO...

GENERAL OUTCOME	OUTCOME STATEMENT
Creating, Making, and Presenting	<ul style="list-style-type: none"> • CM 1.2 explore intrinsic properties of art media to express specific intent • CM 1.3 sustain a concept through diverse approaches and art media • CM 1.5 refine the art-making process through personal skill development from concept to finish • CM 2.1 investigate, create, and employ signs and their signifiers (symbols) to communicate contemporary issues and/or personal meaning through a variety of media • CM 2.3 encourage peers to express individual approaches to and opinions of aesthetic forms in collaborative learning environments
Understanding and Connecting Contexts of Time, Place, and Community	<ul style="list-style-type: none"> • UC 3.2 explore the links between visual arts and the student's personal environment • UC 3.3 continue to develop an understanding of how visual arts contribute to the creation of culture • UC 3.4 actively engage in art advocacy • UC 3.5 investigate the ways in which artists explore social and artistic issues • UC 3.6 give voice to personal concerns through visual expression • UC 4.1 explore and share a developed appreciation for the diversity of art and artifacts from individuals and various cultures • UC 4.2 incorporate in their personal artwork visual images that are inspired by a variety of cultural, socio-economic, and national origins • UC 4.3 articulate through various texts how artists and the arts inform, define, and cause us to question and reflect • UC 4.4 analyze personal understanding of how individual and societal values affect their own response to visual arts • UC 4.6 recognize and respond to artworks from different cultures and periods • UC 5.1 create artwork that is informed by other arts disciplines
Perceiving and Responding	<ul style="list-style-type: none"> • PR 6.2 continue to engage in the critical process to develop informed, aesthetic responses • PR 6.3 recognize strategies by which visual art and design problems can be resolved • PR 8.2 demonstrate an awareness of how consideration of the intended audience affects and impacts on an artwork

PRIOR TO VIEWING THE FILM

GUIDING QUESTIONS

- How can natural resources be used in a sustainable way?
- What are the consequences of unsustainable practices?
- What makes a successful ecosystem?
- How do different groups of people impact ecosystems?
- How have human relationships with the environment changed over time?

BRIDGE-IN: Students will be shown an [introductory video](https://www.youtube.com/watch?v=HH5LynC6US0) (https://www.youtube.com/watch?v=HH5LynC6US0) on the term “Netukulimk” that is taken from the Ocean School Teacher Help Centre (2019). The video is narrated by a grandmother fish (Mi'kmaw elder) as she speaks to little fish and presents the history of cod. The little fish listens and learns the story from her grandmother and grows to be a grandmother herself, passing on the oral history and the importance of living in harmony with nature.

Video created for Ocean School by Elder Albert Marshall, Producer Cathy Martin and Artist Shaela Kinting

WHAT IS NETUKULIMK?

Netukulimk, the Mi'kmaw way of living with nature, provides the perspective for a study of ecosystems. The interconnectedness of biotic and abiotic components of an ecosystem will lead to an understanding of energy input and matter cycling as we discuss food webs. We will analyse the impact of humans on ecosystems as we travel into our studies of environmental stewardship. Netukulimk teaches us 4 key understandings:

- 1) Co-Existence:** Sustaining oneself without compromising the future, with our hearts and minds we are constantly finding, creating, and maintaining balance; taking care to not create an imbalance with the environment. Sustainability is a way to learn from the past to provide for the present while also ensuring the ability to provide for the future.
- 2) Interdependence:** Recognizing the reciprocal relationship with nature to assure the survival of the environment and its people. Interconnectedness is being able to keep the bigger picture in mind with our actions.
- 3) Community Spirit:** Connecting everything and everyone to guide our hearts and our minds in all of our actions. Spirituality leads to interconnectedness and the expression of gratitude and honour for everything and everyone including the concept of wejjsqalia'ti'k, “from this earth we spouted.”
- 4) Respect and Responsibility:** Engaging as responsible community members who advocate for social/environmental action. Stewardship teaches responsibility and respect for one another and for the environment.

Despite the variety of size and ranges of ecosystems, 2 key principles govern them: **energy flow** and **chemical cycling**. Not only is it important for both to happen internally, but externally, these underlying principles shape all ecosystems.

INTRODUCTION: This short film follows Autumn Peltier, Chief Water Commissioner of the Anishinaabe-kwe Nation, as she prepares to speak to the UN in New York City. She resides on Manitoulin Island, Ontario.

PRIOR TO WATCHING THE FILM: Use this space to brainstorm your initial thoughts about water.
What is water?

Why is it important?

Who do you think should protect water?

What responsibilities do you think a water walker has?



Manitoulin Island, Ontario

VIEWING ACTIVITY 1: While watching the film, answer the questions below.

1) The film opens with the lines *“water has no flag, water knows no race”*. Discuss what is meant by the narrator when they open with these lines.

3a) How are Canadians connected to water?

b) Why do Indigenous rights need to be prioritized to achieve a sustainable future?

2) During the film, it is mentioned that *“water is the lifeblood of earth; if contaminated, we all get sick”*. How does this statement connect with what we have discussed in class about the concept of Netukulimk?

4) What responsibilities does a water walker have? In what way has Autumn Peltier been affected by these responsibilities?



5) What is a boil water advisory? How does this advisory affect First Nations people?



7) What emotions did you feel when you learned that kids living in a most developed nation, Canada, live with water conditions that are similar to those in least developed nations?

How could these emotions fuel climate action?

6a) What is environmental racism?

b) What examples can you give of environmental racism where you live?

8) The film highlights the importance of community youth leaders. In the film we see youth activists coming together for the Climate Change Strike. What is the purpose of the Youth Climate Change Strike?

Do you think that it's actions served a purpose? Explain.

9) Autumn Peltier's famous line in her UN address was *"You can't eat money, you can't drink oil"*. What do you think of this statement? Who is she addressing with these words? What actions does she want the leaders to take?

10) The film Water Walker features art by Michif/Métis Artist Christi Belcourt. How did the imagery in the film connect you to Autumn's story?

ASSIGNMENT 1: WATER CONSERVATION POSTER CAMPAIGN



The film *The Water Walker* emphasizes the importance of **youth** in environmental action. Imagine that you have been hired by your local community to create a poster campaign to promote water protection to your community members, it's companies and visitors.

- *What message do you want to communicate to your town about water?*
- *How do people in your community need to care for water?*
- *What actions can be done to save the water?*

Gather information and art supplies to develop graphics that will promote your collective voice. You may wish to pull inspiration from Christi Belcourt's beautiful images from the film and adopt a similar style to communicate your message.

ASSIGNMENT 2: DEVELOP AN ENVIRONMENTAL STEWARDSHIP PLAN

PART 1: After viewing the film *The Water Walker*, it is likely that you are feeling the need to act and promote environmental stewardship like Autumn. Now is the time for action! Form a small group and build a brainstorm as you think about the following questions.

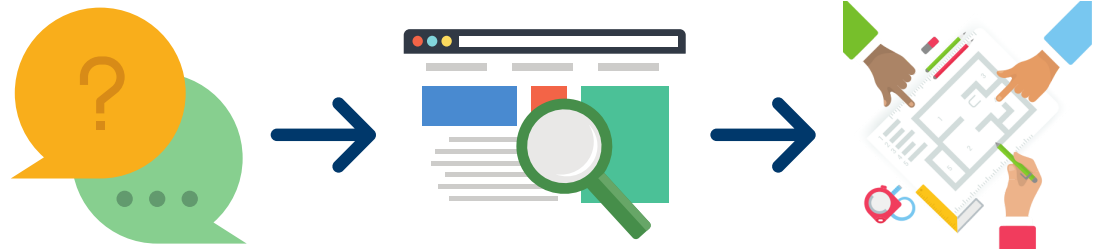
- *Why is it important to care for the environment?*
- *Is there water around your school or community that would benefit from the development of a local initiative being developed to promote better care for its environment?*



As you start your brainstorm, you will likely need to choose, prioritize and refine ideas in your group. Environmental action takes collective collaboration! Stay positive as you work! After your brainstorm has bloomed, evaluate which idea you would like to learn more about.

- *What questions do you have about this area?*
- *Who do you need to contact or where can you find information to answer your questions? It is likely that there are multiple perspectives and alternative solutions to care for your selected problem.*

PART 2: Begin to ask and revise questions and locate relevant information that will help you to answer the question your group has chosen to be the most important for your area. Start to formulate a plan to help mitigate or adapt to the effects of climate change on water within your community.



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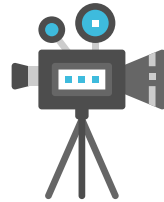
QUESTIONS TO CONSIDER:

- *What does your group propose be done to take care of the water in your community?*
- *What actions would your group like to take to raise awareness about the importance of protecting this area?*
- *Who do you need help from within your community?*
- *What special skills does your group have that will be a benefit to your community and this water area?*
- *How will your action impact the community in a positive way? Include the core concepts of Netukulimk in your plan (respect, responsibility, relationship and reciprocity).*

PART 3: Communicate your plan to the class! Use the strengths your group has to select a meaningful way to communicate your action plan to the class. Have a quick conversation with your teacher to help refine your presentation strategy.



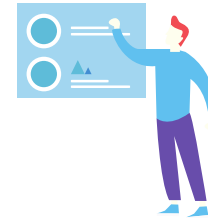
Will you present something that is written?



Will you use drama or film to communicate your plan to the class?



Would art be an effective way to communicate your action plan to the class?



Would you rather use a spoken narrative to communicate your plan?

POST-VIEWING RESOURCES

1. The website Indigenous Climate Hub is an excellent resource. You can visit this website here: <https://indigenousclimatehub.ca/> Students can learn more about climate action programs in Canada and read a blog about climate change and actions they can take to promote environmental action plans.
2. Want to listen more to Autumn Peltier and learn how to use your youth voice to promote change? Have a listen to her and Greta Thunberg as they are interviewed during the Toronto International Film Festival (TIFF 2020): <https://www.youtube.com/watch?v=h1JbSBqZpQ>. (running time 32:09).