Youth Climate Action Now (YouCAN):

Atlantic Canada Teachers' Guide to Climate Education

These learning experiences were created by Atlantic Canadian educators.

YouCAN! Youth Climate Action Now | TuPEUX! Action jeunesse pour le climat

This project was undertaken with the financial support of:
Ce projet a été réalisé avec l'appui financier de :

Environment and Climate Change Canada | Environnement et Changement climatique Canada

YouCAN! Youth Climate Action Now | TuPEUX! Action jeunesse pour le climat

Foundation Clean

Conservation Corps Newfoundland and Labrador

STEAM PEI

projet gaia | the gaia project

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Youth Climate Action Now (YouCAN) - Atlantic Canada Teachers' Guide to Climate Education

Introductory Section

Climate Education Resources

Land Acknowledgement

P'jilasi (Mi'kmaq) / Kulasihkulpa (Wolastoqey) / Ullusiakkut (Inuktitut) / Tunngasugit (Inuktitut)/ Kuei! (Innu) / Bienvenue / Welcome

The YouCAN/TuPEUX project takes place across the traditional, unceded territories and ancestral homelands of the Mi'kmaq, Wolastoqiyik, Beothuk, the Innu of Nitassinan, the Inuit of Nunatsiavut and Inuit of NunatuKavut. The greetings above do not include the Beothuk greeting as the language has been mostly erased from history.

Like First Peoples have done since time immemorial, we as environmental educators strive to be responsible stewards of the land for the next seven generations and beyond. We acknowledge and respect the diverse cultures, ceremonies, and traditions of all who call this region home, and commit to working in the spirit of truth and reconciliation to make a better future for all.

As treaty people, we all have a responsibility and part in Truth and Reconciliation.

Below, you can find just a few of the resources that can support Indigenous Knowledge.

- Ta'n Weji-sqalia'tiek: Mi'kmaw Place Names
- L'nui'suti: Mi'kmaw Language App
- Mi'kmaw Kina'matnewey *(Developer of L'nui'suti & other Mi'kmaq educational apps)*
- Wolastoqey app
- Innu Aimun Language Resources
- Nunatsiavut Language Resources
- The Beothuk Institute

Value of climate and environmental learning through the Indigenous lens

- Recognizing that we are in a **reciprocal relationship** with the land
- Creating more empathy and **respect** for the land and those a part of it
- Recognizing that we have a **responsibility** as humans and global citizens
- Recognizing our role in the problem and a part of the solution
- Applying these teachings to our relationship with one another

Climate Change and Environmental Education

Despite polarizing conversations happening, we are living in a time of growth, empathy and understanding. We are seeing a shift toward bringing more climate and environmental education into our schools and policies while also honouring Indigenous Ways of Knowing.

Atlantic Canada and our relationship and proximity with the ocean has led to us being leaders in this work. For instance, New Brunswick's Climate Framework is one of the leading Climate Education frameworks. Across Atlantic Canada, there is a holistic and responsible integration of climate and environmental education into the curriculum with Indigenous perspectives.

While we are all living through the impacts of climate, environmental changes, and extreme weather, the physical and mental health of youth are more likely to be affected, according to a 2023 study[1] completed at Lakehead University.

Our hope is that the resources in this guide will inspire you in new ways to foster knowledge, empathy and a belief that solutions are possible.

Thank You to All Educators

> *"Teachers* inspire the smallest hearts to grow big enough *to change the world."*
>
> - Paula Fox .

As educators, you are a big part of helping our learners respond to changes with resilience, by providing awareness, education, and hope.

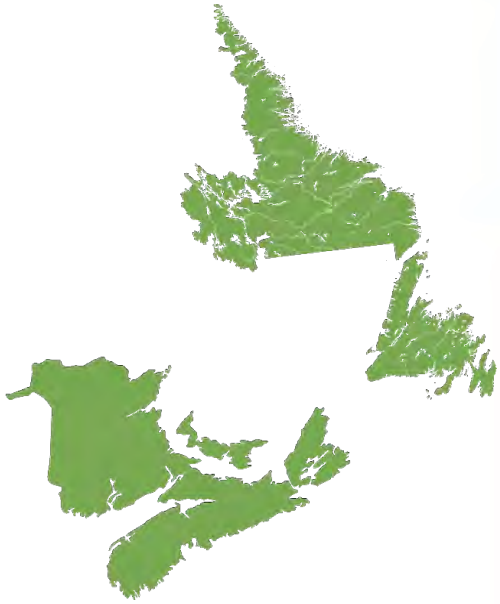
Thank you for the work you put in each day, for each of your learners. By exploring climate and environmental education along with your students, you are sowing seeds. Positive impact will begin to grow, innovation and solutions will continue to spread, all because youth had teachers like you.

[1] *Galway, LP & Field, E. 2023. Climate emotions and anxiety among young people in Canada: A national survey and call to action. The Journal of Climate Change and Health. V9*

YouCAN-TuPeux: Youth Climate Action Now Project

The Youth Climate Action Now (YouCAN) project was a five-year collaborative initiative between four Atlantic Canadian environmental education organizations. These organizations engage youth and educators with the goals of improving climate awareness and understanding of personal mitigation efforts, supporting educators across disciplines to educate on climate science and empowering youth to take action in their own lives and communities.

- Clean Foundation (NS)
- The Gaia Project (NB)
- STEAM PEI
- The Conservation Corps of Newfoundland & Labrador (CCNL)



Over the project's duration, the YouCAN project's reach spanned the region:

- Professional learning was provided to over 2,000 educators across the Atlantic provinces. Educators received locally focused support to meet provincial curriculum requirements.
- Over 70,000 youth were empowered and supported to lead hundreds of climate actions to address climate change in their communities

While this project concludes in 2025, these organizations remain committed to working together to provide meaningful environmental education throughout the Atlantic Provinces.

Learning Experiences: Approaches and Guiding Principles

This Atlantic Teachers' Guide offers a positive approach to engaging students in climate change education, helping them discover how they can be part of the solution. We offer a cross-curricular approach, integrating climate and environmental education into all subjects, including English, Math, Science, Art, Music, and Social Studies.

These activities encourage active participation and help develop a sense of empowerment in students. The goal is to equip youth with knowledge and tools to address climate challenges and to act at local, regional, and global levels.

Our Guiding Principles

- Meaningfully and respectfully integrating Indigenous Ways of Knowing where possible
- Equity and Social Justice
- Social Emotional Learning & Building of Empathy
- Cross-curricular learning

Approach

The learning experiences presented here have been designed to facilitate action through:

- Hands-on and interactive experiences including: Play-based, Place-based and Story-based experiences
- Weaving Etuaptmumk (Two-Eyed Seeing) throughout
- Building understanding, resilience and hope through solution-based experiences
- Inquiry based learning: problem solving and cooperative learning
- Empowering one's own learning through student led experiences

What to expect from this teacher's resource

Each Atlantic Region worked to respond to the needs, differences and structures unique to their regions. Learning experiences will differ between regions and will be seen through structure and style.

Curriculum may also reflect subtle differences between each Atlantic region as well as differences in renewed curriculum.

Climate and Environmental Basics

"Climate change is one of the most critical global challenges of our time."

- United Nations Environmental Programme (UNEP)

Our students, whether young children or youth, have most likely already heard about "climate change", "extreme weather", "global warming" or "fossil fuels." With climate and environmental education being included more recently in Atlantic Canadian curriculum, students are better able to understand, interpret and take action instead of feeling doomed or hopeless.

Principles of Climate Literacy

Climate literacy is an understanding of the climate's influence on us and society and our influence on the climate.

Essential Climate Principles

1. The Sun is the primary source of energy for Earth's climate system.
2. Climate is regulated by complex interactions among components of the Earth system.
3. Life on Earth depends on, is shaped by, and affects climate.
4. Climate varies over space and time through both natural and human-made processes. Our understanding of the climate system is improved through observations, theoretical studies and modelling.
5. Human activities are impacting the climate system.
6. Climate change will have consequences for the Earth system and human lives.
7. Humans can take actions to reduce climate change and its impacts.

What Causes Climate Change?

The Greenhouse Effect is a natural process that helps regulate the Earth's temperature.

- The Earth receives energy from the sun, which is re-radiated into the atmosphere.
- Greenhouse gases (GHGs) act like a blanket, trapping some of the sun's energy in the atmosphere, warming the Earth.
- This process is essential for maintaining a livable temperature on Earth (unlike extreme temperatures on Venus and Mars).
- Human activities, like burning fossil fuels, add more GHGs than necessary, disrupting the natural balance.
- The enhanced Greenhouse Effect leads to more warming of the atmosphere.

- Some GHGs remain in the atmosphere for centuries, meaning warming will continue for decades, even if actions are taken to reduce emissions now.

Weather vs. Climate

Weather and climate are often confused, but they are not the same. The key difference is the measure of time:

- **Weather** refers to atmospheric conditions over a short period (hour-to-hour, day-to-day, season-to-season).
- **Climate** refers to how the atmosphere behaves over long periods (typically 30 years or more). **Climate** is the average of weather over time and space.
- Climate change refers to changes in the long-term averages of daily weather.

Climate Change vs. Global Warming

Global Warming and **Climate Change** are related but not interchangeable:

- **Global Warming** refers to the ongoing rise in global average temperatures near the Earth's surface.
- **Climate Change** is a broader term that includes significant changes in climate patterns (temperature, precipitation, wind, etc.) over extended periods (decades or longer).
- **Global Warming** is causing changes in climate patterns, often in opposing ways (e.g., rising global temperatures can lead to more severe winters).

Human Involvement in Climate Change:

Since the Industrial Revolution (19th century), human activities have been the primary cause of climate change.

- Evidence from ice cores, pollen counts, temperature records, and other methods shows long-term climate changes linked to human actions.
- The Industrial Revolution led to increased use of machinery, combustion engines, and fossil fuel burning, releasing CO2 and other greenhouse gases (GHGs).
- Growing population pressure on industrial agriculture has increased land use and fertilizer application, further releasing more GHGs.

Human-caused climate change results from the increase in GHGs through a range of activities, including:

- Burning of fossil fuels for energy production, industrial processes and transportation, including the shipping of products (train, truck and container ships)
- Land-use changes including deforestation, since trees, plants and soil naturally store carbon.
- Agricultural practices (farm animals release methane gas, and nitrous oxide is released from the overuse of synthetic fertilizers)

- Release of fluorinated gases (e.g. chlorofluorocarbons, or CFC's) from industrial processes, and the use of refrigerants and other consumer products.

These activities release GHGs into the atmosphere at unsustainable rates and are forcing natural cycles to overload which then results in changes to our climate. Our lives are directly connected to the climate and the environment. The Earth is a closed system, full of intertwining cycles that require balance – we are dependent on it, though it is not dependent on us.

What are the Impacts of Climate Change?

Over the past century, human activities have released large amounts of GHGs into the atmosphere. These gases in the atmosphere retain heat which in turn causes the global surface temperature to rise.

The impacts of higher global temperatures include, but are not excluded to:

- Rising global temperatures both on land and sea (average over the year and around the globe)
- Glacier, permafrost and sea ice melting
- Sea level rise due to sinking land (subsidence) and melting glacial ice
- Increased frequency and severity of extreme weather events
- Changes in precipitation, resulting in more frequent and severe droughts and floods
- Changes in freshwater availability
- Coastal erosion from storm-related flooding
- Loss of biodiversity and habitat reorganization
- Acceleration of the pace of climate change due to the albedo effect, ocean chemistry changes and permafrost melting (positive feedbacks)

Another important and related impact of the higher amount of the greenhouse gas CO2 in the atmosphere is ocean acidification.

- Higher CO2 causes change in the chemistry of our oceans and waterways. Carbon dioxide is soluble in water and when it dissolves, it makes the water more acidic, which lowers the pH.
- Higher atmospheric CO2 means that the water will become progressively more acidic over time. This has important impacts on all marine life, but especially on shellfish.

What are the Consequences of Climate Change?

Significant impacts for society and human systems include:

- **Human health (mental and physical) –** spread of disease, such as Lyme disease, through the spread of deer ticks; increased respiratory illnesses; increased rate of anxiety (especially considering impacts on livelihoods and personal security)
- **Economy –** loss of livelihoods with damage to infrastructure and way of life; damage to coastal areas and sites of cultural significance
- **Transportation –** damage to roads, bridges, waterways

- **Food security** – changes in growing seasons and local growing capabilities
- **Water security –** saltwater intrusion due to floods and storm surge; increased potential for drought
- **Energy security –** energy grid vulnerability (blackouts)
- **Infrastructure** – require changes to buildings, wharfs, bridges, and relocation away from susceptible locations
- **Natural environment –** increased forest infestations, higher fire risk, coastal damage

Note that this list is not exhaustive; furthermore, most of these consequences are interrelated and compound other effects.

P-3

Climate Education Resources

SUSTAINABILITY ACTION PROJECTS

K-5 ACTIVITY GUIDE

THE GAIA PROJECT PRESENTS:

10 Engaging activities for indoor and outdoor learning

- GET LOCALIZED LEARNING
- GET STUDENT-LED ACTIONS
- GET INDOOR THINKING
- GET OUTDOOR ENTHUSIASM

Land Acknowledgment

This document has been written and produced on the traditional and current unsurrendered land of the Wabanaki peoples, as covered by the Peace and Friendship treaties. This land belongs to their ancestors, their current members, and their future descendants. We are grateful for the opportunity to become allies of truth and reconciliation, sharers of knowledge, and to do our best to uplift Indigenous peoples in our work as we listen and learn about how we can contribute to decolonizing education.

The Gaia Project works in New Brunswick schools to empower students to take action on climate change through education.

contact@thegaiaproject.ca
https://thegaiaproject.ca/en/

This resource was funded by the Environmental Trust Fund

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Acknowledgements

The Gaia Project gratefully acknowledges the partnership with The Department of Education and Early Childhood Development of New Brunswick (EECD MÉPDE) for consulting on the learning activities, and the contributions of the following groups and individuals toward the development of the Sustainability Action Projects: 10 Activities for actioning sustainable practices in New Brunswick Elementary Schools.

Learning communities

Salem Elementary School
Mi'kmaq-Wolastoqey Centre
NB Environmental Network
UNB Faculty of Education
Quartermain Earth Science Centre

INTRODUCTION

SUSTAINABLE DEVELOPMENT GOALS

The Sustainable Development Goals (SDGs), also known as the Global Goals, were adopted by all United Nations Member States in 2015 as a universal call to action to achieve a better and more sustainable future for all by 2030. The aim of the 17 Global Goals is to secure a sustainable, peaceful, prosperous, and equitable life on Earth for everyone now and in the future. Each activity has an accompanying logo (or more) in the top right corner to facilitate identifying the connections to the goals.

ETUAPTMUMK AND INDIGENOUS PERSPECTIVES

Settlers have acquired significant learnings from the Indigenous Peoples of the land. Some of these concepts are identified along with terminology in both Mi'kmaw and Wolastoqey languages which will be colour coded for identification. Etuaptmumk (eh-du-wup-du-monk) is a Mi'kmaw concept developed by Albert Marshall that infers the ability to understand the world through two perspectives, one Indigenous and one western influenced, or two-eyed seeing (Bartlett, Marshall & Marshall, 2012). Western knowledge and traditional knowledge offer two different perspectives but share characteristics for understanding how and why the world operates as it does. These activities will require students to use both world views to create understanding.

SUSTAINABILITY ACTION PROJECTS

TABLE OF CONTENTS

NOTE:

WATCH FOR CLICKABLE EXTERNAL WEBSITE AND VIDEO LINKS

CHAPTER 1: LEARN OUTDOORS

OVERVIEW

The learning activities presented in this chapter include key themes such as needs versus wants, personal hygiene, sustainability, and environmental awareness.

Students will be introduced to sustainable practices such as composting, reducing waste, observing water quality and taking age appropriate action to reduce the ecological footprint of schools.

Whenever possible, get your students outside to participate in these activities to encourage a human relationship to the land.

Allow students to become engaged, explore and attempt to explain their experiences using this adapted version of the 5E learning model.

PROJECT 1 :
COMPOST INVESTIGATION

GOAL :

Learn about decomposition and the benefits of composting organic matter while exploring what happens to materials that do not break down in nature.

A compost investigation led by grade 1 students at Salem Elementary School in Sackville, NB

MATERIALS :

- Shovel or digging spades
- Soil collected from a garden or nearby forest
- 6x glass jars
- Gloves
- Rabbit food
- Water

'BROWNS'

- Cardboard
- Dried leaves
- Straw
- Paper

'GREENS'

- Food scraps
- Fresh plants
- Grass clippings
- Manure

SPARK ACTIVITY

Read a story about worms, composting or decaying matter. There are a few stories to choose from in the literature catalog. Be sure to emphasize the process of decomposition and the word decay.

After the story, write down a recipe for compost. This includes greens, humus, soil and water.

This learning activity offers the great opportunity to practice Etuaptmumk (eh-du-wup-du-monk), two eyed seeing, through perspectives of western scientific investigations and the Mi'kmaw sustainability principle of Netukulimk (Na-du-ga-lumpk).

Explain that by using these valuable gifts from the Earth, we can create a nutrient rich soil to grow plants and vegetables. Netukulimk is a Mi'kmaw word used to describe the concept of using natural resources in a sustainable way.

By using the greens, humus and soil from the school yard, we are gifted a rich resource from the Earth to use responsibly in this investigation.

An example of a vermicompost bin full of worms hard at work.

The final ingredient for the compost recipe will include randomly selected items collected by students on the playground.

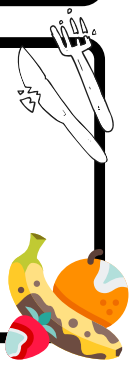
EXPLORE THE PLAYGROUND

STEP 1:

Head outside and divide students into groups to collect different ingredients for the experiment, allow for students to collect any items they think will decompose (including plastic, foil, etc).

STEP 2:

Return inside and lay out the random items collected to observe for the investigation. Encourage students to turn on their SUPER SENSES and make observations about the items using smell, touch and sight.



EXPLORE THROUGH INVESTIGATION

STEP 3:

Choose six of the random items to investigate and observe their ability to decay in compost. There are some key conditions that must remain the same for each jar, such as:

- How much soil goes in each jar
- The size of the jar
- Where the jar is placed during the investigation
- How much water the jar receives, etc

STEP 4:

Once students select the six items to investigate, place the items in separate jars and add the ingredients for composting (soil, greens, humus, rabbit food).

- Add a cup of water to each jar and you may even add worms (make sure each jar has the same amount/size of worms).
- Place lids on the jars. The lids must have small holes for air to get in and out.
- Allow students to draw or write some initial observations (use senses; smell, touch, sight).

STEP 5:

- Students will record observations of the jars for 7 weeks.
- Add water to jars occasionally. Use a spray bottle to not soak the soil.
- After the 7 weeks, record your final observations and estimate if you believe the items are decaying and why.

WAIT AND OBSERVE FOR 7-WEEKS

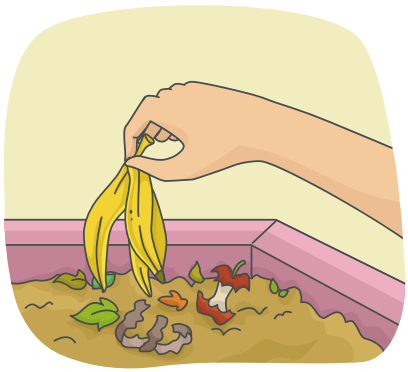
EXPLAIN WHAT HAPPENED

Explain the benefits of decaying matter for building healthy soil for plants and crops. Discuss the challenges of composting (smell, transporting soil, fruit flies, etc.)

Could a compost system work for your school?

EXTEND THE ACTION

Many schools around the province have student led composting initiatives to divert organic waste from landfills. These initiatives could lead to a school garden program for growing food and becoming a more sustainable school community.



Contact The Gaia Project for a current list of grants and resources.
contact@thegaiaproject.ca

15 LOVE NATURE

PROJECT 2 :

ANIMAL NEEDS

GOAL:

Explore the human impacts on animals from climate change by pretending to be squirrels! This experiential activity highlights the reliance wildlife have on their environment, changes in climate and the negative impacts of human activities.

MATERIALS:

- Chart Paper
- Blocks (red, green, yellow, blue)
- 20 Blankets/Towels
- Food Tokens

LOCAL CONNECTIONS

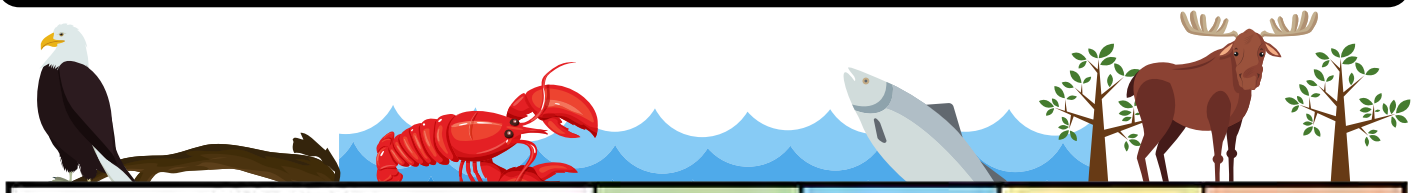
Seven-generation sustainability necessitates a sensitivity to the well-being of all living things seven generations forward and backward. Encouraging seven-generation sustainability can create empathy for species at risk. Atlantic Salmon require unpolluted cold streams and rivers for spawning. Dramatic changes in water levels because of alternating droughts and severe storms, plus overall temperature rise, serve to further endanger the salmon.

Learn more about species at risk in NB

SPARK ACTIVITY

Gather blocks of four different colours for a scavenger hunt. Blue blocks represent water, green blocks represent food, yellow blocks represent shelter and red blocks represent air. Distribute a few blocks of each colour around the classroom.

1. Bring students to a seated area and write some the following native species of New Brunswick on the board. Use English, Mi'kmaw, and/or French terminology for the animals.



Living Thing			Food	Water	Shelter	Air
English	Mi'kmaw	French				
moose	Tia'm	orignal	leaves	stream	tree cover	breathing
salmon	Plamu	saumon	insects	lives in	sea	gills
eagle	Gitpu	aigle	fish	food intake	nest	breathing
lobster	Jagej	homard	fish	lives in	ocean bottom	gills

2. Next introduce the 4 basic needs of animals. Pick a few examples and have students describe the ways the local animals meet their basic needs.

3. Have students take turns searching the classroom while moving like an animal of their choosing until they find a block of each colour.

EXPLORE OUTDOORS

The best way to explore animal needs is to go where the animals live. Practice place-based learning and bring students to an outdoor area with space to move around. Where better to learn about animal habitats than in the space that animals meet their needs?

ANIMAL NEEDS ROLE-PLAY GAME:

STEP 1:

Students cover themselves in a blanket to simulate a warm den in the winter season.

STEP 2:

On the facilitator's signal (audible or by gesture) "Spring", students collect as many food tokens as they can (food tokens are acorns, pinecones, etc.).
The term, "Wotokoniye" (woo-dg-nee-yeh) from the Wolastoqey language meaning the thawing of mother earth with warmer weather can be used as an audible signal.

STEP 3:

After collection has occurred, signal "Autumn", or use the Wolastoqey term for the autumn season, "Toqwa'q" (dohk·waahk), indicating that students must find a new den (blanket) to take shelter for another cold season.

STEP 4:

Stop the activity and explore how many food tokens each group of animals collected. Do your students understand that the success of the animal depends upon collecting food tokens for energy?

STEP 5:

Recognize that animals will achieve better health by gathering more food tokens. Discuss the role of animals in the warm seasons to meet their needs and prepare for cold seasons. Compare this to how humans prepare for the winter season.

PART 2

Reset the playing field by replacing the food tokens and have the students return to their winter shelters.
This time another group of students will be in a new role, Human builders. The builders will remove some of the food tokens in one area of the playing field making it harder for animals to meet their needs. Repeat the game with several scenarios in which the builders group interferes with the animal's tasks (i.e. remove tokens/shelters, etc.)

EXPLAIN THE CHALLENGE

Lead this discussion by revisiting the initial question, "What can we do to help animals meet their needs?" What human activities are restricting animals from meeting their basic needs?

How will extreme weather events impact local animals?

Have students share and record some ideas to preserve and enhance animals as they meet their food, shelter, water and air needs.

EXTEND THE ACTION

The next steps are up to your classroom. You can reach out for community support or apply for grants to implement an outdoor nature conservation corner. Suggest designating a "Wild Corner" of the playground that will remain a safe place for plants and animals to grow and flourish.

Contact The Gaia Project for a current list of grants and resources.
contact@thegaiaproject.ca

PROJECT 3 :

WATER KEEPERS

GOAL:

Learn about water conservation through observation of water and it's sources!

This experiment is designed to encourage students to ask questions about access to clean water and the impact pollution to water systems has on all living things.

Wolastoqiyik people standing along the edge of the water at French village, Kingsclear, celebrating Corpus Christi Day, ca 1887. Canoes, traditional dress, and a priest are in view. Photo credit: Provincial Archives of New Brunswick.

MATERIALS:

- 3 large water jugs
- Waste Items
- Water
- Journals

LOCAL CONNECTIONS

The Wolastoq River (Saint John River) formed the territory of the Wolastoqiyik and Passamaquoddy First Nations before the colonization of European settlers. The Wolastoq is the longest river in Eastern Canada and was one of the best transportation corridors for trade amongst Indigenous communities

Learn more about local watersheds in NB

SPARK ACTIVITY

Take students outside to explain the activity to them, encourage them to think about the ways that they use water that they home and at school.

Option 1:

Students can being this investigation by simply observing and playing with water. Find an area in the school playground to observe water. Where are the puddles? Where does water hold on the playground?

Challenge students to create dykes and dig channels and rainwater will travel through. This spark can be weather dependent by allow students to do the work in preparation for the next rainy day. Students will keep a close eye on their rain gardens and channels in the coming days as they anticipate the rain. Make sure they observe if the water looks clean and where they think the water is going to go next.

Option 2:

Follow a drop of water. This is a brainstorming and writing activity in which students will imagines the life of a drop of water. Where does it begin? What modes on travel will the droplet take? Think about the drains, taps, rivers, lakes, rain and snow transformations across their community. When is the water clean and safe to drink? When is the water not safe to drink?

EXPLORE THROUGH INVESTIGATION

Begin a 2-week investigation to observe the human impact of pollution on water sources.

STEP 1:

Add water (3/4 full) to 3 jugs and set in a safe area for daily observations.

Each day add a piece of organic waste to Jug A, a piece of inorganic waste to Jug B, and leave Jug C as a control.

STEP 2:

STEP 3:

Each day students will make observations on their water jugs. Students should use their eyes, their nose, and even their hands to describe the state of each jug. Do not recommend tasting the water.

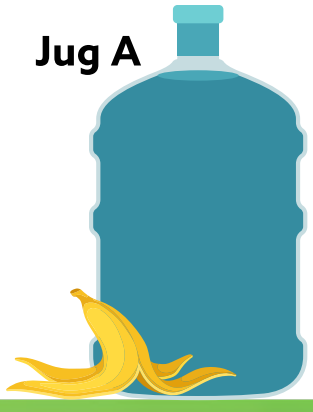
Ask students; which jug would you want to drink? Which jug is a good home for fish? Which jug could you wash your hands in? How could we filter the water in this jug?

STEP 4:

STEP 5:

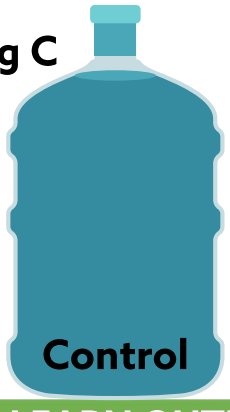
After 2 weeks take final observations and clean up the investigation.

Jug A



Jug B

Jug C



EXPLAIN THE IMPACT

Students have collected data using their senses to build an understanding of the importance of water quality.
Collect observations from the student investigation and create a concept map for each jug on the board. Avoid subjective terms like gross, yucky or weird.

Examples:

Foggy Murky
Dirty **JUG A** Stinky
Brown Bubbles

Crowded
Dirty **JUG B** Foggy
No Smell

Clear
Clean **JUG C** No Smell
Colourless

Ask students a variety of questions about the jugs:

- Which would they use to water flowers?
- Which would they want fish to live in?
- Which would they want to drink from?
- What are the main differences between organic/inorganic waste?
- Which jug smells the worst? What might that bad smell suggest is going on with the water?
- Where does water go after leaving the drain at our school?
- How could polluted water affect the life of a marine creature?

Allow students to draw conclusions based on their findings but reassure them that communities work very hard to protect clean water, but we can all do our best to reduce pollution by not wasting water.

EXTEND THE ACTION

The next steps are up to your classroom. Students should consider ways they can reduce water waste. They may even create posters to promote saving water at the fountains and sinks around the school. Learn more about the various NB Watershed Associations in your region and take this investigation into a higher level of action.

PROJECT 4 :

BIKE WALK ROLL

3 STAY WELL

GOAL:

This project requires students to gather data as the students of your classroom or even the entire school community contributes to protect our shared Earth by reducing pollution. The data platform for this project exists online and can be linked to daily routines in the morning, recess, or lunch hour.

MATERIALS:

- Computer
- Journals
- Chalk
- Bikes

Students learning more about electrifying transportation with the Electrify Your Ride program at The Gaia Project.

LOCAL CONNECTIONS

Harsh winter conditions can make it difficult to travel to schools and work, and public transportation is not available in all regions of New Brunswick. Pollution can be reduced by biking, walking, carpooling or even investing in electric vehicles which can significantly reduce the collective pollution of transportation. Schools all around the province can learn more about electrifying transportation with The Gaia Project and the NB Lung Association.

Learn more about EV programs in New Brunswick:

https://thegaiaproject.ca/en/programs/ **https://nb.lung.ca/DriveElectricNB**

SPARK ACTIVITY

Get students thinking about the impact of transportation and air pollution with this activity.

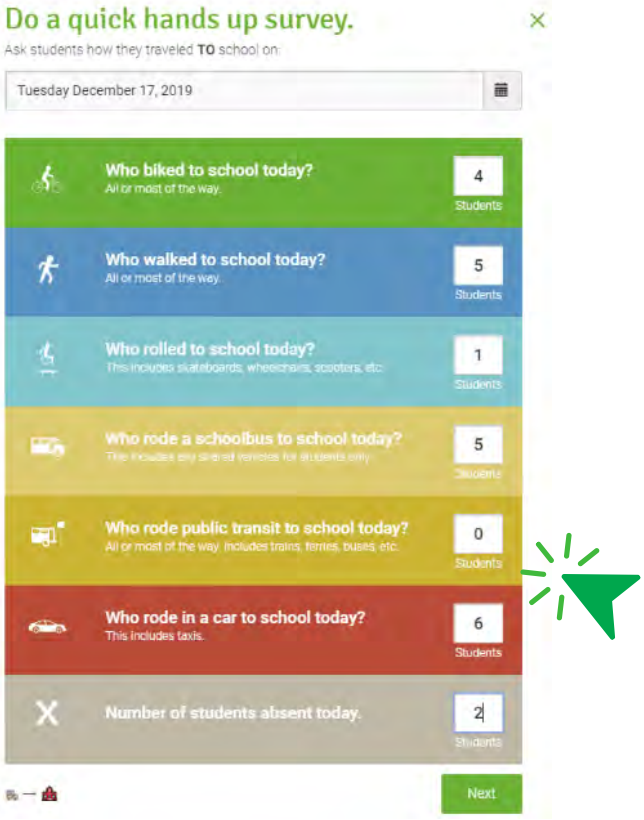
Ask your students to list all possible methods of transportation to school. List these options of transportation on the board. Next, ask students to brainstorm more creative ways to travel to school (i.e. air balloon, electric bus, stilts, etc.). Once a list is compiled ask the follow questions about each method of transportation.

1. What is the negative impact on the environment of this method of transportation?
2. Can you rank these methods of transportation based on positive impacts to human health?
3. What are the factors that influence their results? (distance travelled to school, weather, season, traffic, pollution, etc.).

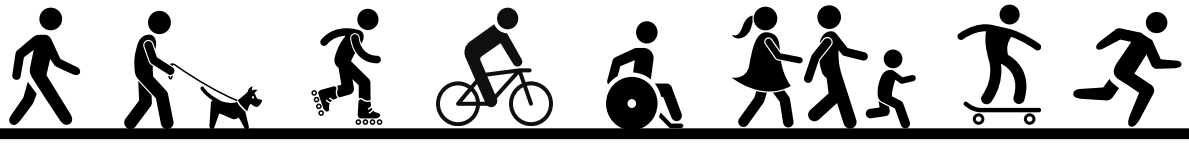
EXPLORE THROUGH DATA COLLECTION

Inform students that they will be collecting data to share with a Canada-wide project called Bike, Walk, Roll.

survey found @ https://bikewalkroll.org/



Your class will sign up online and each day submit data on how many students in the class biked, walked and rolled to school. Do not allow for students to feel guilty about the pollution generated to travel to school as this is out of their immediate control. Remind students that the goal is to have a collective impact as an entire school community, students, staff and parents.



As students become more confident with this online tool, expand the project to gather school wide research. Surveys become more accurate and powerful with increased sample sizes. The more students surveyed, the more informative the results. Students may use class time to create chalk or paint prints from local neighbourhoods to the school yard. This will support a safe Bike, Walk, or Roll to the school in the mornings. Give each group different classes and grade levels to collect data from each day, or once a week. Be sure other teachers are on board by explaining the positive impact students are promoting.

EXPLAIN THE IMPACT

The website has some amazing tools to show students the impact they can have by encouraging their school to bike, walk or roll and reduce GHG emissions.

Present this powerful data to your school administration or district team to encourage other schools to be leaders in sustainability projects like Bike, Walk, Roll. Encourage students to walk or bike to school safely by drawing chalk footsteps on nearby sidewalks to the schoolyard.

EXTEND THE ACTION

The next steps are up to your classroom. Students can go further raising awareness about reducing transportation emissions in a safe manner. Some schools paint or draw fun footsteps leading from surrounding neighbourhoods to the school property for safe biking, walking and rolling to school.

Option 1:

How does reducing pollution make for a healthier environment for students? This initiative is extremely beneficial to the physical health of your students. Raise awareness with posters or have your students record a podcast about the benefits of the Bike Walk Roll program.

Option 2:

Is public transportation available in your region? If not, how come? What restrictions would your community have from riding the bus? Get creative about ways to reduce the transportation pollution in your region. Survey locals to get their opinion.

Option 3:

You can use the ESRI Story Maps tool to learn more about bicycle transportation in your region or explore what other Canadian cities have done to display their data.

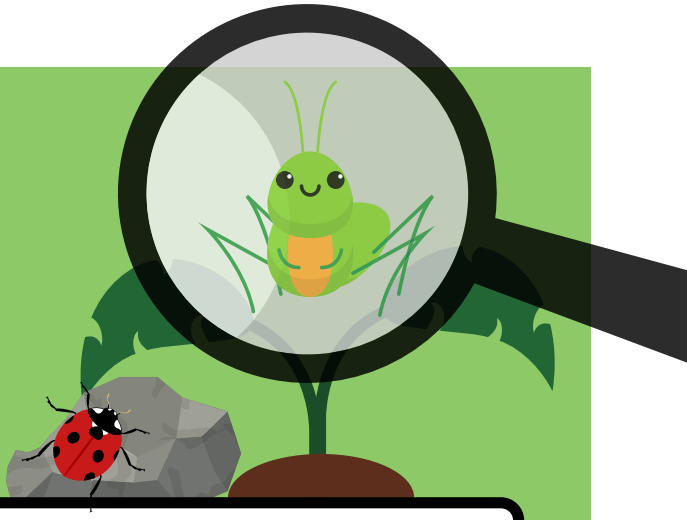
PROJECT 5 :

BUDDING BIOLOGISTS

15 LOVE NATURE

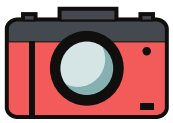
GOAL:

Use the power of observation, and curiosity to explore and learn about the natural world. Take seasonal notes on plants and wildlife around the school grounds (and beyond) to generate a class discussion.



MATERIALS:

- ~20 leaves (in pairs)
- Weather-appropriate clothing
- Notebook
- Pencil crayons, crayons, pencil and/or markers
- Camera (optional)
- Reusealable plastic bag (optional)



LOCAL CONNECTIONS

There are many organizations in NB that work to conserve wildlife. Encourage students to look them up at home with their families to get a better understanding of the work that these organizations do:

- Nashwaak Watershed Association
- Ducks Unlimited
- Nature NB
- ACAP
- Nature Trust NB
- Conservation Council NB

SPARK ACTIVITY

Get students exploring leaf shapes while practicing their drawing skills

Before this activity:
Collect 10-12 pairs of leaves from your school yard or surrounding area OR use printable leaf cut outs from this link.

1. Place the leaves into a hat or box for students to draw from.
2. Have students randomly select a leaf from the hat until each student has a leaf.
3. Inform students that they must find another student with the matching leaf shape.
4. Once students locate a partner they must then use their notebooks to draw the leaf to the best of their abilities.
5. If there is time left over have students swap leaves and draw a second shape.

EXPLORE YOUR SURROUNDINGS

Get Ready! Before heading outside, make sure you and your students are appropriately dressed for the weather.
Option: You can pack your field notebooks or leave them in the school to work on later.

Go Outside! Head towards an area that has become naturalized (perhaps there's a forest nearby). Nature is all around us, even in dense cities.
Observe nature with your students as you walk down a sidewalk, wander through an alley, visit a park, or even on the playground.
If you have access, explore a forest, a pond, a farm, the seaside, a lake, a community vegetable garden, a riverbank or a bog, then go for it!

RECORD YOUR OBSERVATIONS!

Remind students that they're going to be recording things that they can see in the area around them in their field notebooks.

- **What Are Field Notes?**

Field Notes include the date, location, drwaings, and some basic observations about what you've found as you are in the place of observation.

Field Notebook Idea #1: Mindful Observation

Invite your students to look around and see what interesting things they can find.

What senses are they using tp observe? Some examples:

- LOOK at the different colours of flowers or leaves
- SMELL the different types of plants
- LISTEN for any nearby creatures
- Do you recognize any plants or animals? Write down their names.
- LOOK for different types of seeds, what animals eat them?
- LOOK for big objects and small objects, soft objects and rough objects!

Field Notebook Idea #2: Seasonal Changes

Have you students pick their own 'special tree' to observe throughout the school year. Encourage them to research the tree species (Plant ID app), and some interesting facts about it.

Each month, have your students visit their tree and write down field notes or make a drawing about changes that they observe through the seasons.

Make some observations with your students about their tree:
Is this a coniferous tree or deciduous tree? Hardwood or softwood?
Does this tree produce nuts? pinecones? fruits? flowers?
What do the leaves look like? feel like? smell like?
Describe the colour and texture of the bark.
Do you notice any roots coming out of the ground?
Do you notice any signs of other critters living in or near your tree?

Each time you visit the tree, notice what has changed since your last visit and record these observations in your field notebook.

REFLECT ON NATURE

Once you're back in class, take out your findings and lay them out on a table or present around the room on the walls. Encourage your students to study the textures, colours, smells, and patterns of each object.
You and your students have just spent a great deal of time absorbing nature's beauty. How did it make your students feel? What kind of emotions do they experience when they observe nature?
Consider the principles of the Honorable Harvest, an Indigenous world view or 'rule of thumb' before taking anything to inspect further in class.

EXTEND THE ACTION

Plant some edible trees and shrubs at school for some exciting harvests with your students. Some local varieties include:
Haskap berries (June) - Strawberries (June)
Apples and Pears (September/October)
Grapes and Blackberries (September)
Remember to plant in an area that receives full sun and is protected from harsh winter winds. Make sure to fertilize and minimize air pockets when placing in hole and give it a good soak! In the first few summers it may require some water during dry spells.

CHAPTER 2: LEARN INDOORS

OVERVIEW

The learning activities presented in this chapter are linked to key themes including provincial identity, sustainability, leadership and environmental disposition.

Students will be introduced to sustainable practices such as eating local foods, environmental awareness, reducing waste, investigating resource extraction, and taking age appropriate action to reduce the ecological footprint of the school.

There may still be opportunities to get your students outside to participate in extension activities, or to make connections to the outdoor learning investigations.

Allow students to become engaged, explore and attempt to explain their experiences using this adapted version of the 5E learning model.

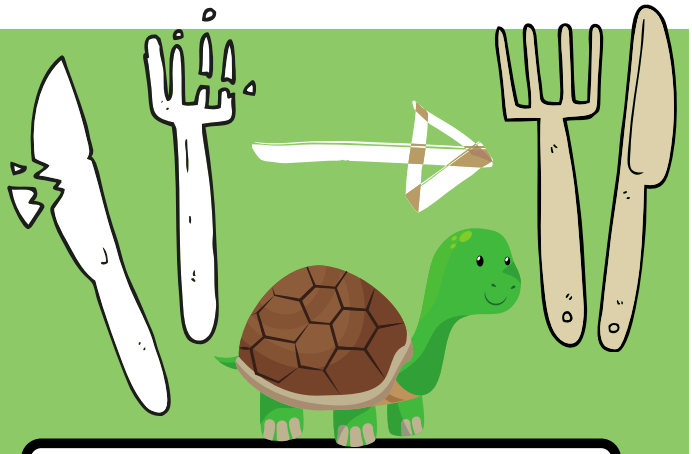
PROJECT 6

PLASTIC AWARENESS

12 LIVE BETTER

GOAL:

Learn about plastic and how most of it ends up in the landfills, our oceans and waterways, and the environment. Tackle the challenges of single-use plastics with your students and investigate the types that they may encounter bother at home and in school.



MATERIALS:

- Poster Board
- Plastic Waste
- Art Materials

Globally, researchers estimate that the production and incineration of plastic will pump more than 850 million tonnes of greenhouse gases into the atmosphere annually.

LOCAL CONNECTIONS

New Brunswick's Regional Solid Waste Commissions have realized that the key to finding a market for our recyclables is to provide a steady supply of clean, sorted product. Different plastics have different properties, so even a small amount of the wrong type can ruin a 'melt' of recycled plastic.

Learn more about plastic recycling in NB

SPARK ACTIVITY

Watch these videos and start a discussion with your students about how waste has impacted their lives or the lives of someone they know.

Here are two videos that explore how plastic waste impacts habitats:

1) Youtube Search: All the Way to the Ocean

This 15-minute video follows two friends as they discover the relationship between plastic pollution and the health of rivers, oceans and marine life.

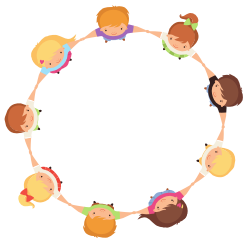
2) Youtube Search: A Whale's Tale CBC Kids

This 3-minute video follows a Whale and other marine animals impacted by human pollution.

EXPLORE THROUGH MOVEMENT

STEP 1:

Students form a large circle, seated and hold hands. The interior of the circle represents the ocean.



STEP 2:

Select 4 students to move around the ocean as marine animals. They can move anywhere in the circle, but they may not touch any piece of plastic or they are out of the circle.

STEP 3:

Place plastic bottles and bags the ocean, making it more difficult for the marine organisms to move throughout the circle.

STEP 4:

Continue to add plastic in intervals until the students, find it difficult to move freely.

EXPLAIN PLASTIC

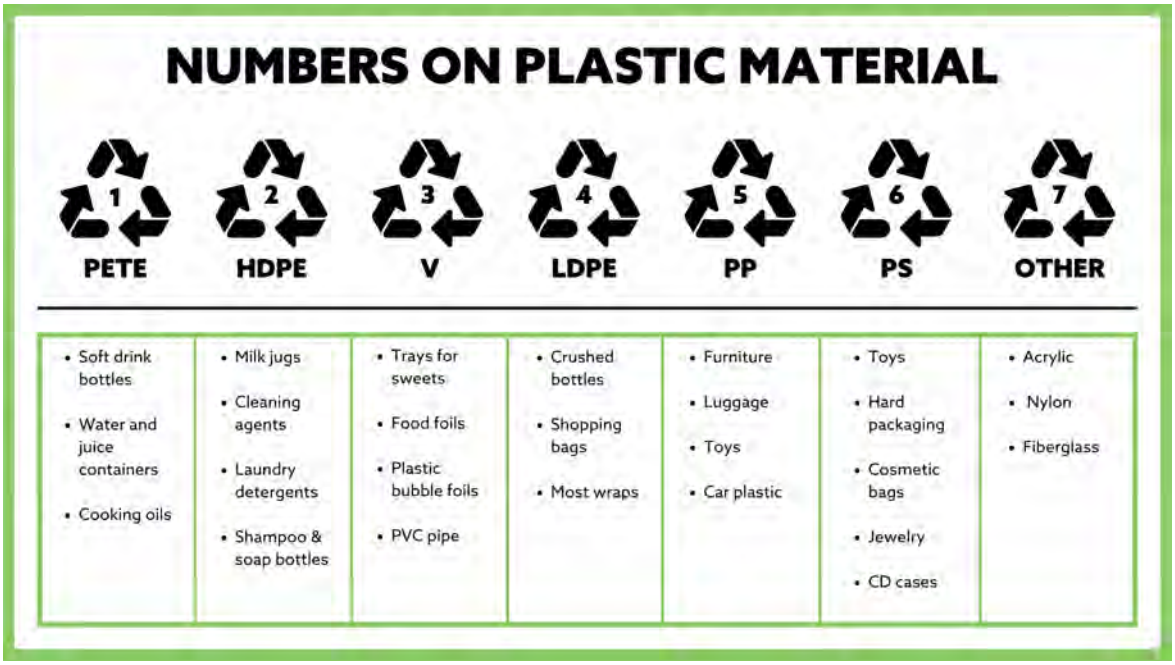
Students observe that plastic waste impacts the habitats of many animals. When plastics break down, they don't biodegrade; rather, they break into smaller pieces, many of which end up in the oceans as microplastics that harm aquatic life and birds.

Discuss how plastic is manufactured in a factory and used to package many of the products we use daily. Ask students to identify products they use daily that use plastic. There are symbols and numbers on most plastic products to signify their chemical make-up. Have students investigate the plastics from the first activity to find these symbols and numbers.

Recycling agencies use these numbers to determine which plastics can be recycled and repurposed. Some of these plastic products are unsafe to reuse for eating or drinking, including common #1 water bottles.

EXPLAIN PLASTIC

Plastic can and has been made from other sources, including plant-based materials such as fibres and starches, but fossil fuels are still relatively plentiful and inexpensive, and plant-based products also present environmental challenges (see Appendix II to find the recycling and waste commissions in your region).



EXTEND THE ACTION

The next steps are up to you! Reach out for community support or apply for grants to implement plastic diversion programs.

Project Grants

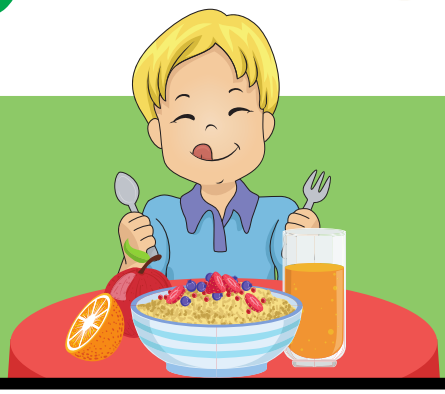
- **Place Aux Compétences**
- **Rising Youth Canada**
- **Pitch-in Canada**
- **Environmental Trust Fund**
- **Canada Post Community Fundation**

Contact The Gaia Project for a current list of grants and resources.
contact@thegaiaproject.ca

PROJECT 7

TRAVELLING FOOD

2 EAT BETTER



GOAL:

Explore the food items we consume daily and how buying local is better for the environment and the economy. Encourage students to bring in food packaging from home to identify which region or country the item came from for this project.

MATERIALS:

- Food containers
- Meter stick
- Maps
- Computers
- Journals

Students hold up their homemade reusable snack bags after working with The Gaia Project.

LOCAL CONNECTIONS

New Brunswick has a variety of natural resources that people have accessed for thousands of years. Two local food resources include fiddleheads and maple syrup. Fiddleheads are picked in the spring near rivers and streambeds while maple syrup is made from the sap of the sugar maple tree. Indigenous Peoples of New Brunswick have been accessing these foods for thousands of years and Mahqankahtimok (mah-gwan-gaht-dee-mog) is the Wolastoqey term for the gift of maple sugaring time.

Learn more about local products of NB

SPARK ACTIVITY

Introduce the Esri Story Maps tool with your classroom. Find the location of a local farm, market, or food production factory and create a simple story map to demonstrate the transportation required for these food products to get to your community. How far did these products have to travel?
To learn more about Story Maps click here.

EXPLORE THROUGH INVESTIGATION

Students are encouraged to collect food packaging from home that would normally be thrown out. Request that students rinse out cans, cartons, cardboard boxes, and/or plastic containers.
Use these packages to investigate the country of origin of these products. To help locate this information you may use the Canadian Food Inspection Agency CFIA label guide.
Record the locations where these products are produced and have students research the distance these foods travelled to get to your community using Google Maps.
The process of food manufactory can be complex, so for the purposes of this activity just ask students to work with the location marked on the food packaging. Sometimes an estimation will be the best measure.

Nutrition Facts
Valeur nutritive
Per 1 cup (250 mL)
pour 1 tasse (250 mL)

Calories 110	% Daily Value* / % valeur quotidienne*
Fat / Lipides 0 g	0 %
Saturated / saturés 0 g + Trans / trans 0 g	0 %
Carbohydrate / Glucides 26 g	
Fibre / Fibres 0 g	0 %
Sugars / Sucres 22 g	22 %
Protein / Protéines 2 g	
Cholesterol / Cholestérol 0 mg	
Sodium 0 mg	0 %
Potassium 450 mg	10 %
Calcium 30 mg	2 %
Iron / Fer 0 mg	0 %

*5% or less is **a little**, 15% or more is **a lot**
*5% ou moins c'est **peu**, 15% ou plus c'est **beaucoup**

Click to read more on food labelling format

EXPLAIN FOOD MILES

Display the data collected by students in kilometres on the board. Create a visual scale for students to observe this data.
You can trace a meter stick on the board which will represent 10,000 KM or a value of distance that students in your classroom will comprehend.
Demonstrate the process of charting your data with an item you've brought from home. For example, if the item is a pack of hot dogs from Manitoba, use a computer to find the distance these hot dogs have travelled and draw a line to represent the distance in relation to your scale (10,000 KM or other).

Students can now observe which products traveled the longest to reach their local community. How did the food travel (boat, plane, truck)?
How much gasoline or jet fuel might have been burned into greenhouse gases (GHG) to deliver these products to New Brunswick? How do we avoid contributing these emissions?
Can we find products like these at the local markets?

Continue to add to the chart for a few weeks and observe if the lines become shorter over time.

EXTEND THE ACTION

The next steps are up to your classroom. Students can consider ways they can reduce their ecological footprint by learning about and buying local foods. Visit the local markets of your community and find out what food products are grown in New Brunswick.

Option 1:

Learn more about our relationship to ugly fruits and vegetables. What form do these foods naturally take on? Do they taste any different?

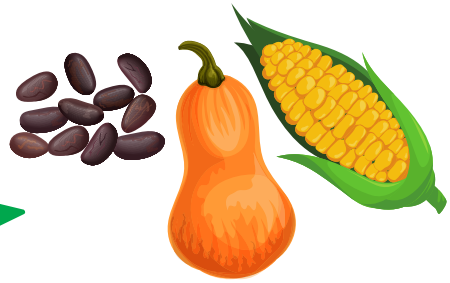
Where to learn: Article of Ugly Fruits

Where to engage: Activities for Students

Option 2:

Mawihpuwok is a term used in the Wolastoqey language meaning 'they eat together'.

Research the traditional foods of local Indigenous communities in the province. Check out the Wabanaki collection for more great resources.



Option 3:

Have your class design a recipe book with a delicious menu provided by your own community. Reduce food miles and celebrate your provincial identity with Acadian, Wabanaki and other traditional dishes.

PROJECT 8

MINE YOUR BUSINESS

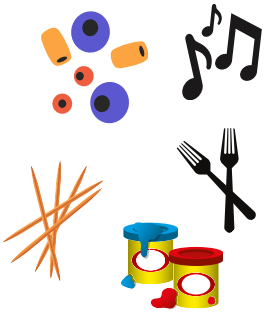
9 MAKE SMART CHOICES

GOAL:

This lesson will allow students to investigate the impacts of mining natural resources required for energy production and the development of industry. Students will consider protecting the natural habitats of living things, the economic influences of different nations, and explore alternative approaches to promote sustainability.

MATERIALS:

- Play-Doh
- Forks
- Music
- Various types of beads
- Toothpicks
- Other tools



New Brunswick's Picadilly Potash mine started production in 2014.

LOCAL CONNECTIONS

New Brunswick's complex geological past has given rise to a diversity of metallic mineral resources and has shaped our landscapes, communities and economy. The province as we know it was formed over the last billion years forged by moving continents, changing climates and complex geologic processes. Metallic mineral deposits may contain metals such as copper, lead, zinc, and iron; precious metals such as gold and silver. Industrial rocks and minerals are plentiful in New Brunswick, including gravel, gypsum and lime.

Learn more about mining in NB and Earth Science Literacy

SPARK ACTIVITY

Dance Game:

Ask four students to come to the front of the class!

- **Student 1 will be attracted to wooden objects**
- **Student 2 will be attracted to metal objects**
- **Student 3 will be attracted to plastic objects**
- **Student 4 will be attracted to glass objects**

This game is like musical chairs. Use your computer or cellphone to play a song and have the four participating students dance and move around the room freely, but when the song stops the students must quickly find the nearest material they are attracted to and touch it. The last student to do so can return to their seat and be replaced by another.

Continue this activity a few rounds and make observations which materials are easiest to locate around the classroom.

- Where did these materials come from?
- Are they man made or natural resources? If so, where did they come from?

Find out what students know about materials that are mined from underground.

EXPLORE HANDS-ON

Before the activity randomly mix various shapes and sizes of beads into containers of Play-Doh. Students will be working with a large slab of Play-Doh, trying to extract these beads with tools. Time to introduce the students to Play-Doh. Be sure to enforce that the Play-Doh is not to be played with, but instead treated as a scientific tool.

1) Break students into groups of 4 or 5 and move each group to a different region of the classroom. Have each group pick a name of their mining company and write it on the board.
2) Give the same 'mining tools' to each group. Start with a few toothpicks.

3) At the right price, students can upgrade to use forks, tongs, paperclips, pencils, or whatever you choose from around the classroom. Just be sure to have a variety of items for mining.
4) Give each group an equal chunk of Play-Doh and provide the rules:
- You may not touch the Play-Doh with anything except the mining tools.
- Beads must be extracted from the Play-Doh.
- No Play-Doh residue should be left on the beads.
- Work as a team or beads will be taken from your company.

EXPLORE MINING OPERATIONS

Allow students to work through the first load of Play-Doh. While students are busy prepare the following:

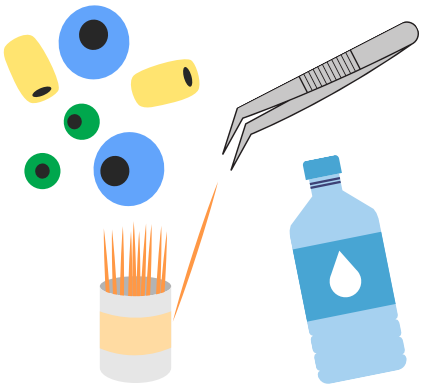
- Introduce a value per bead chart. See different example charts below. The beads may have more value based on size, shape or colour. Inform students that they can now trade clean beads for company value. Prepare a tally on the board to display each companies earnings at the end of the activity.
- Display an equipment upgrade chart for students to access throughout the activity. Student groups can invest their bead earnings to buy new equipment. Here are some ideas how to display these items.

VALUE PER BEAD AND EQUIPMENT UPGRADE CHARTS

Bead Type	Bead Value
Small	$1
Medium	$2
Large	$5

Bead Type	Bead Value
Blue	$1
Yellow	$2
Green	$5

Equipment Upgrade	Cost per Item
• Toothpick	$1 worth of beads
• Fork	$5 worth of beads
• Tweezers	$10 worth of beads
• Cup of Water	$10 worth of beads



EXPLAIN THE CHALLENGES

End the hands-on activity and examine how each company did with bead extraction. Students must do some math to determine their company's total earnings. Write each company total on the board. Now it is time to clean up.

Land Reclamation: Mining is a particularly important industry in many communities across Canada. Members of our society rely on many mining projects to build our cities and use everyday household items that are taken for granted. However, a balance must be agreed upon as the environmental impact can be devastating.

Students must now begin to clean up their mess and put the Play-Doh back in the state that they received it. Give each group a few minutes to for Play-Doh reclamation. The group with the messiest station could be issued a fine for environmental damages. This fine will be reduced from their company profits.

EXPLANATION CONT...

Did this fine have a major impact on company earnings? Was it worth cleaning up the mess to avoid the fine? Does this happen in real life?

Discuss the mining of fossil fuels, uranium, metals and other resources. These resources, like the beads, are not renewable and once used up take very long time to reform in the Earth. Mining is an important industry in many communities across Canada. We rely on many mining projects to build our cities and use everyday household items that are taken for granted. However, a balance must be agreed upon as the environmental impact can be devastating.

Explore the mining waste hierarchy table and reflect on the bead extraction activity. How could students have reduced, reused or recycled the Play-Doh waste?

EXTEND THE ACTION

The next steps are up to your classroom. Consider contacting local outreach groups for a classroom visit or additional educational

NB Virtual Museum Rocks Exhibit
Quartermain Earth Science Centre
Stonehammer UNESCO Geopark

Keep with the current developments around SDG #9!

12 LIVE BETTER

PROJECT 9

WASTE-FREE LUNCH

GOAL:

Encourage students to start practicing a reduce-first method of waste diversion by bringing reusable containers for lunches and snacks. The goal of this activity is to reduce waste as a class and potentially as a school community and explore alternative packaging for food.

MATERIALS:

- Reusable Containers
- Letters to parents
- Balance scales
- Beeswax
- Cotton Sheets
- Wax Wrap Recipes

Bringing in reusable snack bags and straws can help cut down on a lot of plastic waste in schools and you can even make your own bags with students or at home!

LOCAL CONNECTIONS

Reducing waste at the school can have significant direct and indirect impacts. If schools can lead the way with a waste reduction mentality, houses and businesses in the community are likely to follow. Students can share these ideas and practices with parents and vote with their dollars to eliminate the need for single-use wrappers and bags used to package food and other items.

Learn more about waste free lunches in NB schools

SPARK ACTIVITY

Once a day for a week, your class will need to use a scale and weigh the classroom trash bags. Write down the total weight of trash during the week of normal snack and lunches. Display this data on the board for students to observe.

Read the book, "Where does our garbage go?". Ask students where the garbage from the school goes. Does it all get recycled like in the book? Can we do better to sort or reduce or garbage?
Challenge students to reduce the garbage generated in the classroom by targeting recess and lunch time garbage.

EXPLORE WASTE REDUCTION

Students can work with you to draft a letter for parents and guardians that describes an initiative to reduce waste at snack and lunch time. An information sheet on what food items to avoid might help.
It is important to note that there could be socio-economic issues to this initiative if families can't afford reusable containers for their children. Food can be a topic that causes discomfort and highlights inequities amongst students, but this can be explored through the activity. Discuss challenges some families have with keeping the refrigerator full of healthy food. How can we help each other eat well and reduce waste as a team of learners?

Raise awareness around the school about this initiative and seek out reusable containers from teachers, community partners, and other parents at the school. Use this collection of reusables for all students in your classroom to reuse each day through the week.
Begin the action project and be sure to discuss the importance of reducing and reusing each day.

EXPLAIN ECOLOGICAL FOOTPRINT REDUCTION

Weigh the trash bags at the end of each day for a total of 5 days of waste free lunches.
Compare these weight values with those collected before the waste free lunch project.
How much waste reduction was generated by students?
What would happen if the whole school completed a Waste-Free Lunch project?
Waste reduction can reduce the ecological footprint of our schools. We will require less garbage bags and less garbage transported in trucks around our community. Less trucks on the road means lowering emissions sent to the atmosphere.

EXTEND THE ACTION

The next steps are up to your classroom.

Reusable Beeswax Wrap:

You may choose to create reusable food packaging products such as beeswax wrap. This activity does require heat and may not be safe with young students, but you can share the recipe with parents.

Sorting Waste:

Students can consider ways they can reduce and reuse school waste. Contact your local waste commission about school waste diversion upgrades and improved infrastructure.

Contact your local Waste Commission to talk about waste in your area and for more potential programs (see appendix)!

PROJECT 10

TRASH TRACKER

12 LIVE BETTER

GOAL:

Students will take meaningful action to recycle, reduce or reuse waste items from their school, by developing a basic understanding of sorting waste items.

The Trash Tracker activity requires students to develop accountability for their own contribution to the human impact on the environment by creating waste.

MATERIALS:

- Trash
- 6 Buckets or Bags
- Tarps
- Sorting Bins
- Gloves
- Scale

Students preforming a waste audit to find out how much waste could be diverted from the landfill.

LOCAL CONNECTIONS

The Gaia Project works with schools, local waste commissions and the government to educate students about sorting waste and improving the sorting process at the school level. The Trash Tracker program is engaging, educational and safe to conduct with the right materials.

Learn more about NB Waste management

SPARK ACTIVITY

Bring students outdoors to the playground or a similar community area to locate trash. Using gloves students can collect trash items but be sure to keep a tally of any plastic, paper or compostable items to examine back at the classroom.

Return to the class with at least 20 items and examine with the group. Look for different types of materials (plastic, paper, food waste, etc). Challenge students to imagine where these items could have ended up if they were not thrown on the ground.

EXPLORE BY SORTING

The Trash Tracker project requires collection of garbage bags at the school for 2-3 days. Work together with your custodial staff to prep trash for the activity. Do not save trash any longer than 3 days health and sanitation protocols.

STEP 1:

Set up a tarp in the middle of the classroom and place a sorting bin on the tarp.

STEP 2:

Brainstorm with students up to 6 sorting categories for trash. Categories can include types of plastic, metal, electronic, refundable, paper, Styrofoam, compost, etc. Allow creativity but try and synchronize categories to the local sorting requirements of your region.

STEP 3:

Divide students into groups based on the categories they have determined. Each group will be responsible to sort a single category.

STEP 4:

Weigh the trash bags collected after 2 days and record the weight on the board. This weight will be significant in explaining the impact of reducing waste and recycling.

STEP 5:

Pour some trash into the sorting bin, ask students to put on gloves and then one at a time ask groups to come up and sort out their materials.

STEP 6:

After each group sorts out the recyclable materials, the remaining trash should be put into a separate trash bin. Dump more trash into the sorting bin and repeat the process.

EXPLORE BY SORTING

Once the sorting is completed each group must weigh their bucket of materials. Write down each value on the board and have students determine what percentage of trash they may have saved from the landfill.

Introduce the Esri Story Maps tool with your classroom. Find the location of the local landfill. Create a simple story map to demonstrate the travel of garbage trucks to transport this school waste to your community landfill. How far would these products have to travel?

Share your story with the Story Maps tool!

EXPLAIN THE IMPACT

By reducing the amount of waste sent to the landfill, your school has reduced the level of greenhouse gases emitted by garbage trucks travelling to the landfill. Hopefully, your students feel positive that they have reduced their waste at the school, but now it is time to ask some hard questions.

Where does the sorted material go next?

- Plastic and paper must be separated properly, and often single-use paper products are created with plastic coatings. These materials cannot typically be recycled. Paper waste must be clean to be recycled. Contamination from water, food or other substances can ruin an entire batch of recycled paper.
- Electronic waste must be taken to a designated area. Most schools do not have curbside pick-up as it can be expensive. This makes recycling programs difficult to achieve.

Think about reducing, reusing and refusing certain waste items before having to recycle.

EXTEND THE ACTION

The next steps are up to your classroom. Students can improve the waste sorting process at their school. Are the recycling containers marked and presented in a logical way?

Students may be more interested in higher level systems of waste diversion. What are the regional and provincial policies to sort and recycle, reduce or reuse waste items?

How do we make the producers of plastic packaging accountable for all the single-use waste items in our classroom?

Write a letter to your regional waste commission to learn more about these issues. Explore critical justice citizenship and learn about what our provincial leaders can do better to reduce waste in your community.

Learn more about Recycle NB Regional Commission Programs

EXTEND YOUR ACTION

The next steps are up to your classroom. You can reach out for community support or apply for grants to implement plastic diversion programs.

Project Grants

- Place Aux Compétences
- Rising Youth Canada
- Environmental Trust Fund
- Canada Post - Community Foundation

Contact The Gaia Project for a current list of grants and resources.
contact@thegaiaproject.ca

Students should consider ways they can contribute by:

1. Helping clean the school yard or other nearby community areas.
2. Creating posters to spread awareness about the dangers of single-use plastics.
3. Improving school plastic sorting practices.
4. Creating a collaborative art project with plastic waste materials in the school.
5. Crafting reusable grocery bags from old, donated clothing.
6. Completing Project #9 Waste Free Lunches.

APPENDIX ITEMS

- WORD WALL
- COMMUNITY PARTNERS & SCHOOL GRANTS

WORD WALL

COMPOST INVESTIGATION

COMPOST – DECAY – DECOMPOSE – SOIL – FUNGUS – INSECTS – HUMUS – RECYCLE – REDUCE – ETUAPTMUMK – NETUKULIMK – NIPI – OQOQIAQ– WETI

Compost (noun) - a mixture largely of decayed matter of once living things (as grass) or their products (as coffee grinds) and used for fertilizing and conditioning land.

Etuaptmumk (eh-du-wup-du-monk), two eyed seeing, through perspectives of western scientific investigations and the Mi'kmaw sustainability principle of Netukulimk (Na-du-ga-lumpk).

Humus (noun) - a brown or black product of partial decay of plant or animal matter that forms the organic portion of soil

Netukulimk (Na-du-ga-lumpk) is a Mi'kmaw word used to describe the concept of using natural resources in a sustainable way.

Nipi (noun) – Mi'kmaw term for a leaf (of tree).

Oqoqiaq (noun) - Mi'kmaw term for fungal growth on damp or decaying matter.

Weti (noun) – Mi'kmaw term for a worm.

ANIMAL NEEDS

ANIMALS – AUTUMN – FOOD – HABITAT – HUMAN – NEEDS – PLANTS SEASON – SEVEN GENERATION – SPRING – SHELTER – TIA'M – TOQWA'Q – WOTOKONIYE

Habitat (noun) – the type of environment in which a group of organisms normally lives in.

Seven-Generation Principle (noun) - based on an ancient Iroquois philosophy that the decisions we make today should result in a sustainable world seven generations into the future.

Tia'm (noun) – Mi'kmaw term for moose.

Toqwa'q (dohk·waahk) - a Wolastoqey term transliterated as 'It is Autumn'. Term gifted by Elder Imelda Perley.

Wotokoniye (woo-dg-nee-yeh) - from the Wolastoqey language meaning the thawing of mother earth with warmer weather

WORD WALL

WATER POLLUTION

CLEAN – CLEAR – DRAIN – DRINK – FILTER – MURKY
OCEAN – RIVER – SMELL – SAMQWAN – SIPU – WOLASTOQ

Passamaquoddy (noun) - an American Indian/First Nations people who live in northeastern North America, primarily in Maine, United States, and New Brunswick, Canada.

Samqwan (sam·hkwan) – Mi'kmaw term for water.

Sipu (noun) – Mi'kmaw term for river.

Wolastoq (wool-luss-took) (noun, adjective) - beautiful and bountiful river renamed St. John. Wolastoqey adjective for things i.e. food etc.

BIKE WALK ROLL

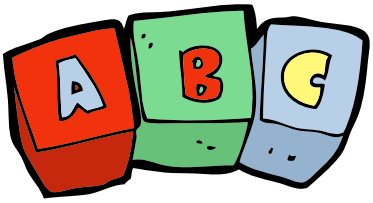
AIR QUALITY – DISTANCE – EMISSIONS – GWITN – HYBRID –
IDLE – POLLUTION – SURVEY – TRANSPORTATION

Emissions (noun) – something that has been released or emitted into the world. Car exhausts or radio transmissions are examples of emissions.

Gwitn (noun) - Mi'kmaw term for canoe.

Hybrid (adjective) – a thing made by combining two different elements; a mixture.

Survey (verb) – to ask (many people) a question or a series of questions in order to gather information.



WORD WALL

BUDDING BIOLOGIST

BIOLOGIST – CONSERVATION – FIELD NOTES – NATURE – OBSERVATIONS – OPOS – PUNASQAHTOQ – SPECIES

Field Notes (noun) - notes recorded by scientists or researchers in the course of field research, during or after their observation of a specific organism or phenomenon they are studying.

Opos (uh-pus) is the Wolastoqey term for tree.

Punasqahtoq (pu-na-squat-took) is the Wolastoqey term for leaf bud.

Species (noun) In biology, a species is the basic unit of classification and a taxonomic rank of an organism.

PLASTIC AWARENESS

CONTAMINATE – LANDFILL – MARINE – MICROPLASTICS – OCEAN – RECYCLE – REDUCE – REUSE – SUKAYEWOTIKON

Contaminate (verb) - to make impure or unfit for use by adding something harmful or unpleasant.

Landfill (noun) - the site used for such waste disposal or the waste disposed of.

Microplastics (noun) - extremely small pieces of plastic debris in the environment resulting from the disposal and breakdown of consumer products and industrial waste.

Sukayewotikon (sook-ay-yay-wo-tay-kun) is the Wolastoqey term for 'anything thrown away' i.e. trash, garbage; slop, toilet contents, sewage.

WORD WALL

TRAVELLING FOOD

EMISSIONS – LOCAL – FIDDLEHEADS – INGREDIENTS – MAWIHPUWOK – MARKET – PACKAGING – PRODUCTION – TRANSPORT – APATOQ – MIJIPJEWEI – MAHQANKAHTIMOK

Apatoq (a·ba·dohk) – Mik'maw term to set aside a portion of food.

Fiddleheads (noun) a wild edible plant that is harvested along riverbanks in the springtime

Mawihpuwok (Mah-wee-pu-wuk) is the Wolastoqey term for 'They eat together'

Mahqankahtimok (mah-gwan-gaht-dee-mog) - is the Wolastoqey term for the gift of maple sugaring time. Term gifted by Elder Imelda Perley.

Mijipjewei (noun) – Mi'kmaw term for food.

MINE YOUR BUSINESS

EXTRACT – FOSSIL FUEL – MINERAL – MINING – RECLAMATION – RESOURCE – REGULATION – RESIDUE – SUSTAINABILITY

Extract (verb) - to choose and take out for separate use.

Fossil fuel (noun) - a natural fuel such as coal or gas, formed in the geological past from the remains of living organisms..

Reclamation (verb) - Returning disturbed land to a usable state.

Residue (noun) - a substance or quantity that remains after a part has been removed or after a process has been completed.

WORD WALL

WASTE-FREE LUNCH

COMPOST – CONTAINER – MULTI-USE – PORTION – REDUCE – REUSE
SINGLE-USE – WASTE*FREE – NOSSUWEHLAL – TPAPEKHIKON

Reduce (verb) Finding ways to reduce the amount of waste that is generated is the first and most important step of the 5 R's

Nossuwehlal (neh-seh-wah-wal) - is the Wolastoqey term for waste (ie the child wasted the milk by pouring it out).

Tpapekhikon (to-pop-back-he-kon) - is the Wolastoqey term for a balancing scale.

TRASH TRACKER

ACCOUNTABLE – COMPOST – CONTAMINATE – GRAMS – JUSTICE – RECYCLE – REDUCE – REUSE – SORT – WASTE – GELEIWATL – NETUKULIMK

Accountable (adjective) being responsible for something or someone.

Contaminate (verb) - to make impure or unfit for use by adding something harmful or unpleasant.

Justice (noun) – a concept on ethics and law that means that people behave in a way that is fair, equal and balanced for everyone.

Geleiwatl (ge·ley·wa·dêl) – Mi'kmaw verb to protect or keep safe.

Netukulimk (Na-du-ga-lumpk) is a Mi'kmaw word used to describe the concept of using natural resources in a sustainable way.

COMMUNITY PARTNERS

Click for Local Connections

Professional Learning

Energy
EOS Eco-Energy

Climate
Learning for a Sustainable Future

School Gardens
The Ville Cooperative
Community Garden Best Practices Toolkit

Outdoor Learning
Great Minds Think Outside
Brilliant Labs Outdoor Makerspace

Project Grants

Place Aux Compétences
Rising Youth Canada
Environmental Trust Fund
Canada Post - Community Foundation
OurCanadaProject
Community Food Action Grant

Instructional materials

Climate
R4R - Learning for a Sustainable Future
Bike Walk Roll

Energy & Transportation
The Gaia Project
EOS Eco-Energy
NB Power
ESRI Storymaps
NB Virtual Museum Rocks Exhibit

Traditional Knowledge
Two-eyed Seeing

School Gardens
Whole Kids Foundation
Scotts Canada's Gro For Good program

Biodiversity
Nature NB
Birds Studies Canada
Homarus Eco-centre
Ducks Unlimited
Falls Brook Centre
Nature Trust NB

Local Outreach Programs

- NBEN Earth Education
- NB Museum
- NB Conservation Council
- Quartermain Earth Science Centre
- Stonehammer UNESCO Geopark
- Daly Point Nature Reserve
- Petitcodiac Riverkeeper
- Meduxnekeag River Association
- Mi'kmaq-Wolastoqey Centre
- Maliseet Nation Conservation Council
- Fort Folly Habitat Recovery
- Various NB Watershed Associations
- Recycle NB Regional Commission Programs

Creature Feature

Grade/s: Primary – grade 3
Subject/s: Science, Math, English Language Arts,
Time Required: 1+ hours

Background

This learning experience connects learners to nature by wondering about creatures and objects in nature big and small and observing nature with curiosity and respect. Learners will tally up their findings and then communicate the results through various creative project ideas.

Key Vocabulary & Concepts

- jujijk- Mi'kmaw Insects
- plant and animal beings
- habitats
- tallying
- math stories
- creature art
- respect

Materials & Resources

- Hola hoop or rope
- Magnifying lens
- Insect viewer
- Creature Feature Bingo Card
- Jujijk Mi'kmaw Insects by Tripartite Forum Culture & Heritage Education Committee
- *The Book of Nature Connection: 70 Sensory Activities for All Ages by Jacob Rodenburg*

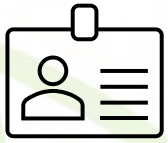
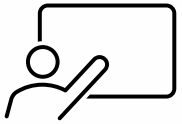
Safety

Check nature areas for dangerous items, garbage, etc that could be harmful to learners. Be mindful of how parks, trails, etc. are used by the general public. See Tips for Checklist for Teaching Outside to help in bringing leaners outdoors.

At a glance: Creature Feature

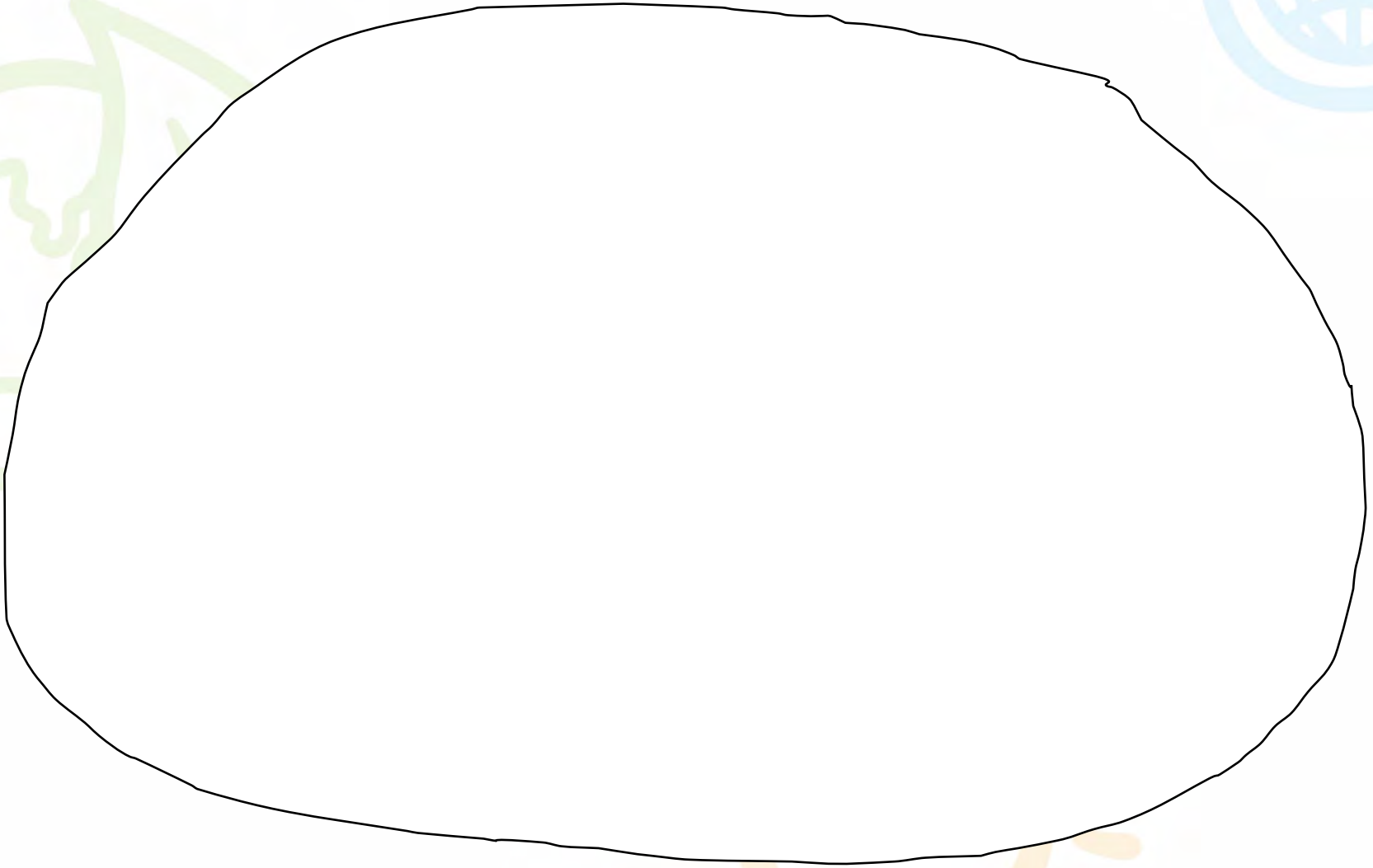
Spark and Driving Question	Idea and Plan Creation	Active Inquiry	Understanding and Communication	Sharing Knowledge or Future Application
What would grab learner's attention and interest?	*Learners make their plan.*	*Learners actively explore and participate.*	*Putting all the learning together.*	*Acting on it and extension opportunities.*
Read Jujijk Mi'kmaw Insects Discuss what else you might see outside.	Learners discuss how to show respect to the creatures they observe. Learners collaborate on a plan for a safe time in nature.	Learners will identify a place in nature to sit and observe creatures. They will use a string tied in a circle, hula hoop or other method to create a circle on the ground for observing. Learners will draw the creatures and objects they discover onto their Nature Math Organizer. Learners use tally marks to record how many of each they've observed.	Learners can use the Creature Feature Bingo Card for a project to represent and communicate their observations and what they've learnt. Learners can communicate what they observed, other interesting information, or share a story about how the creatures or objects belong in nature.	Learners share their observations and projects to one another or the larger school community, hold a Creature Feature Fair or others.
Resources and Materials	**Resources and Materials**	**Resources and Materials**	**Resources and Materials**	**Resources and Materials**
Jujijk Mi'kmaw Insects		The Book of Nature Connection, magnifying lenses, insect viewer, hula hoop or string	Being Cards, Creature Feature Bingo Card	

Creature Feature Bingo Card

Wanted Poster  Learners can design a wanted poster for a creature or object with a picture, description and facts.	Tell the Tale  Learners can give a verbal description and share a story about a creature or object.	Sculpture/ Diorama  Learners can build or craft their creature or object with various materials. Learners should include a description and facts with it.
Math Story  Learners can build math sentences and stories from their observation results.	Poem or Song  Learners can write a poem or song about their experience. It should include a description and facts.	News Article  Learners can write a newspaper article about a creature or object. A picture, description and facts should be included in the article.

My Nature Math

Draw the creatures and nature inside your string circle. Use tally marks to show how many of each creature you found.



Cross-Curriculum Outcomes

Grade	Science	English Language Arts	Mathematics	Visual Art
P	Compare living things through the senses. Test movement of objects.	Interact using effective oral language skills considering audience, purpose, and situation. Demonstrate a variety of ways to comprehend and select from a range of culturally diverse texts.	Students will be expected to recognize, at a glance, and name the quantity represented by familiar arrangements of one to five objects or dots. Students will be expected to relate a numeral, 1 to 10, to its respective quantity. Students will be expected to use direct comparison to compare two objects based on a single attribute, such as length, mass, volume, and capacity.	Learners will create artworks that express feelings, ideas, and understandings.
1	Analyze daily and seasonal change in the environment. Analyze interconnectiveness of living things and the environment.	Interact using effective oral language skills considering audience, purpose, and situation. Demonstrate a variety of ways to comprehend and select from a range of culturally diverse texts.	Students will be expected to recognize, at a glance, and name the quantity represented by familiar arrangements of one to ten objects or dots. Students will be expected to demonstrate an understanding of counting to 20 by: indicating that the last number said identifies “how many”, showing that any set has only one count, and using the counting-on strategy Students will be expected to represent and partition numbers to 20	Learners will create artworks that express feelings, ideas, and understandings.
2	Analyze the relationship between animal growth and the environment (life cycles)	Interact using effective oral language skills considering audience, purpose, and situation.	Students will be expected to compare and order objects by length, height, and mass using nonstandard units and make statements of comparison	Learners will create artworks that express feelings, ideas, and understandings.

			Students will be expected to measure length to the nearest non-standard unit by using multiple copies of a unit. Students will be expected to identify 2-D shapes as part of 3-D objects in the environment.	
3	Investigate plants in the environment	Interact using effective oral language skills considering audience, purpose, and situation Convey meaning by creating print and digital texts collaboratively and independently using imagination, personal experiences, and feelings. Use writing and other forms of representation including, digital texts, to explore, clarify and reflect on their thoughts feeling and experiences and learnings.	Students will be expected to relate the passage of time to common activities using standard units (minutes, hours, days, weeks, months, years) Students will be expected to relate the number of seconds to a minute, the numbers of minutes to an hour, the numbers of hours to a day, and the number of days to a month in a problem-solving context. Students will be expected to demonstrate an understanding of measuring length (cm, m) Students will be expected to demonstrate an understanding of perimeter of regular, irregular, and composite shapes	Learners will create artworks that express feelings, ideas, and understandings.

Atlantic Canada Curriculum Connections

New Brunswick:
https://www2.gnb.ca/content/gnb/en/departments/education/k12/content/anglophone_sector/curriculum_anglophone.html

Newfoundland & Labrador:
https://www.gov.nl.ca/education/k12/curriculum/guides/

Prince Edward Island:
https://www.princeedwardisland.ca/en/information/education-and-lifelong-learning/programs-of-study

Noticing Nearby Nature

Grade/s: Primary to grade 3
Subject/s: Science, Math, English Language Arts, Visual Art
Minimum Time Required: 1+ hours

Background

This learning experience is all about learners becoming more familiar with their senses and observing different elements of the local environment during a nature walk or outdoor sensory time. Excellent inquiries can include: wondering about what beings are present, how can the senses be used safely, and why is nature special.

Key Vocabulary and Concepts

- nature
- plants
- animals
- beings
- mindfulness
- deep breathing
- sense of hearing
- sense of touch
- sense of smell
- sense of sight

Materials

- *'I Hear You, Ocean"* by Kallie George & Carmen Mok
- "*Me and My Sit Spot"* by Lauren MacLean
- Art supplies, chart paper
- Viewing scope
- Art materials

Safety

Check nature areas for dangerous items, garbage, etc that could be harmful to learners. Be mindful of how parks, trails, etc. are used by the general public. See Tips for Checklist for Teaching Outside to help in bringing leaners outdoors.

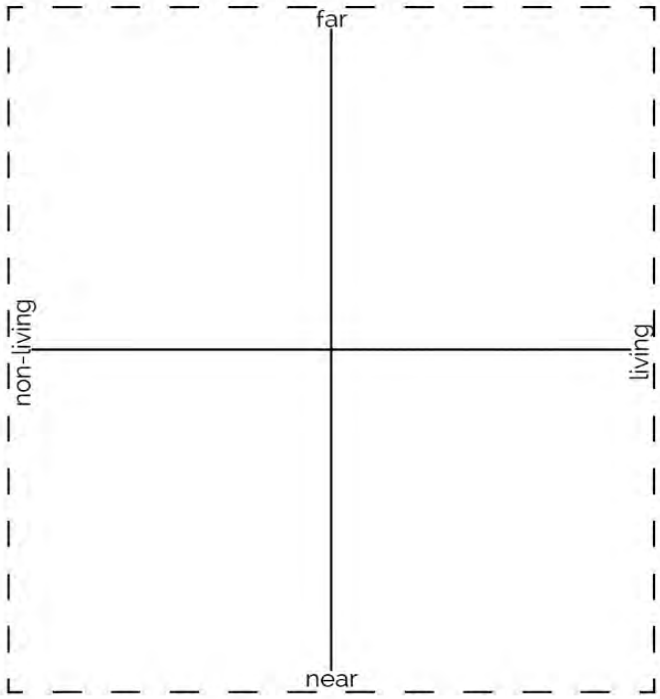
At a glance: Noticing Nearby Nature

Spark and Driving Question	Idea and Plan Creation	Active Inquiry	Understanding and Communication	Sharing Knowledge or Future Application
What would grab learner's attention and interest?	*Learners make their plan.*	*Learners actively explore and participate.*	*Putting all the learning together.*	*Acting on it and extension opportunities.*
Read "*I Hear You, Ocean*" or "Me and My Sit Spot" Learners will share what they noticed or thought of. *Outside encouraged Discussion may include: -what might the beings in the story sound like? -what different colours do we see in the story and in nature? -what creatures do you like to see or hear in nature?	As a class create a digital or drawn collage of local beings. Learners brainstorm how their senses can help find clues about the beings and make a plan to go on a nature walk. Learners talk about how they can use their senses safely.	Go on a nearby nature walk or find a sit spot and include appropriate mindfulness techniques like slow breathing and sitting or standing still while observing their surroundings. **Nature Grounding:** Name 5 things you can see Find 4 things you can safely touch Name 3 things you can hear Name 2 things you can smell Learners can count or compare things in nature (trees, flowers, rocks, etc.), observe with a different tools and use a nature journal to draw pictures or write key words.	Learners can use a variety of materials to visually represent what they noticed on the nature walk. The representations could be used in creating a new collage to display in the classroom or somewhere visible in the school.	Learners can practice respectful listening and telling stories during a sharing circle with a focus on their experience of their senses. Learners can imagine new ways to continue to notice things in nature at home.
Resources and Materials	**Resources and Materials**	**Resources and Materials**	**Resources and Materials**	**Resources and Materials**
I Hear You, Ocean or Me and My Sit Spot	5Ws and 1H, Being Cards	5Ws and 1H, Viewing scope, magnifying glasses, trowel, spray bottle, writing supplies	Art materials	

Noticing Nearby Nature 5W's & 1H ANCHOR CHART

WHO? Who might be here?	**WHAT?** What can we see, touch, smell or hear?	**WHEN?** When are we going and coming back?
WHERE? Where is there water or dirt to explore?	**WHY?** Why is nature so special?	**HOW?** How do we stay safe in this place?

SIGHT



SMELL

Natural	Human-made

HEARING

Natural	Human-made

TOUCH

Object	Description

Cross-Curriculum Outcomes

Provincial Curriculum: Nova Scotia Provincial Curriculum				
Grade	**Science**	**Visual Arts**	**English Language Arts**	**Mathematics**
P	Investigate sand and water through the senses. Compare living things through the senses. Test movement of objects.	Learners will create artworks that express feelings, ideas, and understandings.	Demonstrate a variety of ways to comprehend and select from a range of culturally diverse texts. Convey meaning by creating print and digital texts collaboratively and independently using imagination, personal experiences, and feelings. Use writing and other forms of representation including, digital texts, to explore, clarify and reflect on their thoughts feeling and experiences and learnings.	Students will be expected to recognize, at a glance, and name the quantity represented by familiar arrangements of one to five objects or dots. Students will be expected to relate a numeral, 1 to 10, to its respective quantity. Students will be expected to use direct comparison to compare two objects based on a single attribute, such as length, mass, volume, and capacity.
1	Analyse daily and seasonal change in the environment Analyse interconnectiveness of living things and the environment.	Learners will create artworks that express feelings, ideas, and understandings.	Demonstrate a variety of ways to comprehend and select from a range of culturally diverse texts. Convey meaning by creating print and digital texts collaboratively and independently using imagination, personal experiences, and feelings. Use writing and other forms of representation including, digital texts, to explore, clarify and	Students will be expected to recognize, at a glance, and name the quantity represented by familiar arrangements of one to ten objects or dots. Students will be expected to demonstrate an understanding of counting to 20 by: indicating that the last number said identifies “how many”, showing that any set has only

			reflect on their thoughts feeling and experiences and learnings.	one count, and using the counting-on strategy Students will be expected to represent and partition numbers to 20
2	Analyse the interconnectiveness of air and water in the environment, inclusive of a Mi'kmaw perspective. Analyse the interconnectiveness of air and water in the environment, inclusive of a Mi'kmaw perspective.	Learners will create artworks that express feelings, ideas, and understandings.	Demonstrate a variety of ways to comprehend and select from a range of culturally diverse texts. Convey meaning by creating print and digital texts collaboratively and independently using imagination, personal experiences, and feelings. Use writing and other forms of representation including, digital texts, to explore, clarify and reflect on their thoughts feeling and experiences and learnings.	Students will be expected to compare and order objects by length, height, and mass using nonstandard units and make statements of comparison Students will be expected to measure length to the nearest non-standard unit by using multiple copies of a unit. Students will be expected to identify 2-D shapes as part of 3-D objects in the environment.
3	Analyse soil in the environment**.** Investigate plants in the environment	Learners will create artworks that express feelings, ideas, and understandings.	Demonstrate a variety of ways to comprehend and select from a range of culturally diverse texts. Convey meaning by creating print and digital texts collaboratively and independently using imagination, personal experiences, and feelings. Use writing and other forms of representation including, digital texts, to explore, clarify and	Students will be expected to relate the passage of time to common activities using standard units (minutes, hours, days, weeks, months, years) Students will be expected to relate the number of seconds to a minute, the numbers of minutes to an hour, the numbers of hours to a day, and the number of days to a month in a problem-solving context.

			reflect on their thoughts feeling and experiences and learnings.	Students will be expected to demonstrate an understanding of measuring length (cm, m) Students will be expected to demonstrate an understanding of perimeter of regular, irregular, and composite shapes

Atlantic Canada Curriculum Connections

New Brunswick:
https://www2.gnb.ca/content/gnb/en/departments/education/k12/content/anglophone_sector/curriculum_anglophone.html

Newfoundland & Labrador:
https://www.gov.nl.ca/education/k12/curriculum/guides/

Prince Edward Island:
https://www.princeedwardisland.ca/en/information/education-and-lifelong-learning/programs-of-study

30 Minutes

WHY HANG OUT IN NATURE?

Conservation Corps Newfoundland and Labrador

OUR CONNECTION WITH NATURE

We all have a place, or many places, in nature that make us feel good. These places may help our mind feel more clear or calm, improve our mood, reduce our stress levels, boost our immune system, help us clarify our identity or help our body move in different ways (Robbins. 2020).

These are some of the many gifts of nature.

This activity helps students become more aware of the effect nature has on our emotions and creates a strong visual display that reminds both them and staff at school of the importance of nature in our lives. It also helps students practice and learn words related to nature and our feelings.

FAVOURITE PLACE

Ask students to draw themselves in their favorite place or participating in their favourite activity in nature. There is a list of ideas below to help inspire the class, if needed.

HOW YOUR FAVOURITE PLACE BENEFITS YOU

Ask students to describe the place or activity they've drawn and discuss why it's meaningful to them.

In their own words, have students write a short sentence about why they feel that this place or activity benefits their well-being.

YOUR FEELINGS

Ask students to choose three positive words to describe how they feel when they are in their chosen place. There is a list below to provide suggestions.

NATURE PLACES

Cabin, River, Pond, Beach, Mountain, Trail, Stream, Playground, Garden, Campground, Boat, Canoe. Woods, Camp fire, Hunting, Swimming, Riding, Hiking, Exploring, Quad bike, Skidoo, Forest, Farm.

EMOTIONS

Calm, Relaxed, Excited, Free, Energetic, Happy, Content, Safe, Brave, Thankful, Curious, Peaceful, Confident, Amazing, Silly, Sleepy, Blessed, Pleased. Wonderful, Playful, Joyous.

DISPLAY

Display the student work on a prominent wall where all students can see the connections between our emotions and our time in nature

Bibliography

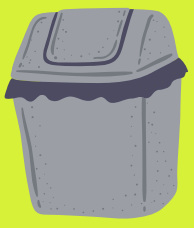
Robbins, Jim. “Ecopsychology: How Immersion in Nature Benefits Your Health.” Yale E360, 9 Jan. 2020, e360.yale.edu/features/ecopsychology-how-immersion-in-nature-benefits-your-health#:~:text=These%20studies%20have%20shown%20that.

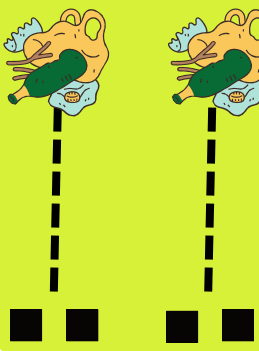
30 Minutes

RECYCLING RELAY

1 EQUIPMENT

Collect two recycling bins and two trash cans. Over the course of a week, collect 40 - 50 items. Approximately half trash and half recycling, with enough for **2 items per student**.





SET UP 2

1. Divide the class into two teams and form two lines.
2. Place a recycling bin and a trash can at the **end** of the line.
3. Divide the recycling and trash items between the two lines and place them at the **front** of the line.

3 THE RACE

When you say start, each team will have to pass an item down the line until it reaches the appropriate bin. Each round (after 10 items have been deposited) supports a different rule (E.g. passing with elbows only or passing through legs).

4 TO WIN

When the item reaches the back of the line, the last student must decide if it is recycling or trash and place it in the correct bin. Once they do so, they move to the front of the line and select the next item that will be passed down the chain. The round continues until 10 items have been correctly deposited by both teams. The team that does so the fastest wins the round, but also gets another new rule (E.g. walk like a crab, deposit the item behind your back, or you must pass without using your hands).

PROGRESSION 5

Host multiple rounds with different members at the back. Change the method of passing. (E.g. elbows or knees only) Move the recycling and trash bin back from the last team member and have them toss the item in.

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RECYCLING RELAY

DISCUSSION

Ask students if there were any surprises with regard to what items could or couldn't be recycled.

Ask students about their knowledge of the numbers on the plastics, and what they mean for recycling. This website is very helpful:

https://www.emterra.ca/blogs/green-factor/plastic-recycling-codes-what-do-they-mean

Review which items can be recycled by visiting https://greendepotnl.ca/whats-accepted/

Talk about upcycling!

UPCYCLING

Upcycling or "creative reuse," is the process of transforming waste materials or unwanted products into new materials or products perceived to be of greater quality, such as artistic value or environmental value. Discuss with your classroom how the items we used today could be "upcycled" into something new!

OTHER CONSIDERATIONS

Be sure that the materials being used for this activity can be safely passed along the chain. Avoid items with sharp edges or heavy objects.

Be sure to rinse recyclable containers when possible before disposing of or upcycling them. Have the students participate in this process over the week leading up to the activity.

Consider discussing the "3 Rs" as part of this activity, including "Reuse" and "Reduce" as additional vocabulary words. It's important for youth to understand that while recycling is an important action, reducing and reusing are even more sustainable practices! Reducing is the most impactful, then reusing, then recycling. Though all three have benefits and are better than throwing things away when possible.

Conservation Corps Newfoundland and Labrador

Lesson Plan Guide: Fast Fashion:

Grades P-3

Climate Science Workshop: Fast Fashion, K-3

Lesson Title: Fast Fashion

Provided by: STEAM PEI

Grade Level: P-3

Subjects Covered: Sciences, Language Arts

Time required for entire activity/lesson: 1.5 hours

Key Environmental Terms: Recycle, Reduce Fossil Fuels, Greenhouse Effect, Dispose, Climate Change

Activity/Background Summary: STEAM PEI's Fast Fashion Climate Science Activity aims to give students an understanding of the impact that 'fast fashion' (mass production of cheap, on-trend, clothing) has on our environment and the climate. Students will discuss ways in which they can help with the fast fashion problem, and will have an opportunity to design and upcycle a piece of old clothing. Materials will be provided by STEAM PEI. For ages 7 and under focus more specifically on what upcycling is, why it's a good thing to do for the environment (similarly to the 3 R's) and then head into the creative activity of designing something small and stuffed, or painting on an old t-shirt.

Prep: 5-30 Minutes:

- Make sure Fast Fashion Kits are stocked.
- Ask Educators to have kids prepare by bringing in an old piece of clothing they no longer use on the day of the workshop. Also have them bring their notebooks and pencils for design sketches

Materials:

- Pieces of cloth
- Fashion accessories/embellishments (yarn,velcro, zippers, studs, beads, etc)
- Natural Clothing Dyes (optional)
- Glue Gun
- Scissors
- Googly Eyes
- Pompoms
- Plastic Jewels
- Hot Glue
- Glue in a bottle
- Buttons
- Fabric Paint

Resources:

- Let's Talk Science Clothing 4 Climate (great resources for Fast Fashion Activities geared towards older students)
- Fast Fashion Video 1
- Fast Fashion Video 2
- The Life Cycle of a T-Shirt Video
- Denim Upcycling Ideas

Safety Considerations:

- Scissors and needles should be used under supervision.
- Younger kids should be using children's scissors and should not be using needles in this activity.

Educator Checklist:

Depth of Inquiry:

- Guided: educator choose topics and questions and learners design a product or solution.

Reflection

- Have I accommodated the diverse learners in my classroom? How?
- Have I considered culturally relevant pedagogy? How?
- Do I have a range of sizes of clothing/fabrics?
- Have I considered culturally relevant pedagogy? How?
- Am I considering that some learners might be from countries that are the origins of most clothing?
- Are there opportunities to collaborate with our community?
- Where are the opportunities for assessment?
- What tactics can I use for kids that are struggling with the activity?
- How can I make everyone feel included?
- Did I think of multiple ways so that students feel like they understood the lesson?
- Are there barriers or limitations to this lesson?

Skills Continuum

What skills will be implemented in the learning experience:

- Creativity and/or imagination
- Estimating
- Sustainability
- Exploration of variables in a controlled environment
- Problem Solve
- Question
- Evaluate
- Designing
- Sketching
- Use different types of materials to solve a problem

Details

Curriculum Outcomes (Prince Edward Island):

Kindergarten: Early Numeracy: 4.2 build and describe 3-D objects p.106

Social Studies: 1.2 begin to develop an awareness of needs and wants that are common to all children p.114

Health and Physical Development: 1.2 develop control of small muscles p. 138
3.2 demonstrate curiosity and interest in learning p.148

Creative Development: 1.2 express ideas and feelings creatively through artistic expression p.158

Grade One: General Curriculum Outcome 1: Science, technology, society, and the environment (STSE)—Students will develop an understanding of the nature of science and technology, of the relationships between science and technology, and of the social and environmental contexts of science and technology. P.9

LS – 2 Classify the characteristics and needs of living things p.27

Grade Two: 203-3 communicate procedures and results, using drawings, demonstrations, and written and oral descriptions p.20
201-3 use appropriate tools for manipulating and observing materials and in building simple models p.34
203-1 communicate questions, ideas, and intentions while conducting their explorations p.34

Grade Three: 201-2 manipulate materials purposefully p.61
Identify materials that could be used to solve the problem posed, and suggest a plan for how they will be used (200-5) p.61

REFERENCES:

1. Kindergarten Prince Edward Island Integrated Curricula: https://www.princeedwardisland.ca/sites/default/files/publications/eelc_kindergarten.pdf
2. Grade One Prince Edward Island Science Curriculum: https://www.princeedwardisland.ca/sites/default/files/publications/eelc_science_1.pdf

3. Grade Two Prince Edward Island Science Curriculum: https://www.princeedwardisland.ca/sites/default/files/publications/eelc_science_2.pdf
4. Grade Three Prince Edward Island Science Curriculum: https://www.princeedwardisland.ca/sites/default/files/publications/eelc_science_3.pdf

Overview

Activity Plan:

Introduction	3 minutes: Introduce STEAM PEI and what we do, Introduce ourselves. Ask: Is clothing wasteful? What is waste and why do we produce it?
Details	5 minutes: Show the Fast Fashion Video
Pre Activity Discussion	10 minutes: Have a short discussion about the impact of fast fashion on the environment. Some guiding questions: ● What do you think is involved in the life cycle of a single piece of clothing? ● Why do we use old materials for crafts? ● Where did the clothes you are wearing right now come from? Can you check the tags? ● Are clothes wasteful? ● How can we reuse materials? ● What are the 3 R's?
	40 to 60 minutes: Mention the importance of being careful and keeping themselves and others safe while using some of the equipment (e.g. scissors). You can use a PowerPoint Presentation with images of crafts to make out of old clothing/fabric or to make a graphic t-shirt by painting on their clothing with fabric paint. There are 4 steps to the process: 1) Draw their Design 2) Get Feedback and Input from Facilitators 3) Create their Design 4) Get input from Facilitators and make changes if needed
Sharing and Post	15 minutes : Have the kids show off and share their designs if

Activity Discussion	they want to. If they are wearable designs they can also do a Fashion Show! Some guiding questions: How did you feel about the activity and the upcycling process? Do you have any ideas for future upcycling activities you can do at home? Thank the students for their ideas and creative designs.
KPI Survey	● Ask participants the 2 KPI Questions on Survey Form and Record. ● Record the total number of students that participated in the activity.

Lesson Plan Guide: Power of the Wind: Windsocks, Grades P-3

Power of the Wind: Windsocks, P-3

Lesson Title: Power of the Wind: Windsocks

Provided by: STEAM PEI

Grade Level: K-3

Subjects Covered: Sciences, Language Arts

Time required for entire activity/lesson: 1 hour

Key Environmental Terms: Wind, energy, turbine, climate change, fossil fuels

Activity Summary: Through these detailed descriptions based on age, the aim of the lesson is to teach them what wind is, and how wind energy helps the earth with its energy output, by avoiding using GHG's, as wind energy is a renewable resource. Wind Socks will help us start the activity and conversation of how wind works.

Background Information: Wind carries a lot of energy. Energy that has the power to make wind chimes sing, windsocks flap, waves to surf, windmills to mill grains. We are learning about what wind is, and the potential of this type of energy. Additionally how it helps the climate by using wind energy.

Preparing for the Learning Experience:

Prep: 15 Minutes

- Cut enough yarn for day
- Cut x3 streamers per kid
- Print out notes about wind for younger/mid kids/older kids

Materials: (Things participants work with, please also link/list where you would source each material)

- Paper–Staples
- Streamers– Dollar Store (cut into 5 inch strips) x3 strips per kid
- Markers or Pencil Crayons–STEAM
- Pencil Crayons–STEAMx1 per group
- The three little pigs book–Indigo
- String–Dollar Store (10 inches) x1 per kid
- Stickers

Resources: (Extras like books, video links, things that provide information/context)

- Slides

- The three little pigs

Safety Considerations: Consider not using markers, or asking the classroom teacher beforehand if they are okay with markers.

Educator Checklist:

Depth of Inquiry:

Structured: learners follow the lead of the educator as the whole class works

through the inquiry process

Reflection

- Have I accommodated the diverse learners in my classroom? How?
- Have I considered culturally relevant pedagogy? How?
- Do I have a range of sizes of clothing/fabrics?
- Have I considered culturally relevant pedagogy? How?
- Am I using knowledge outside of the PEI context?
- Are there opportunities to relate this project to other weather technologies?
- Where are the opportunities for assessment?
- What tactics can I use for kids that are struggling with the activity?
- How can I make everyone feel included?
- Did I think of multiple ways so that students feel like they understood the lesson?
- Are there barriers or limitations to this lesson?

Skills Continuum

What skills will be implemented in the learning experience:

- Creativity and/or imagination
- Fine motor skills
- Exploration of variables in a controlled environment
- Measuring
- Question
- Evaluate
- Design

Details

Curriculum Outcomes (Prince Edward Island):

Kindergarten: : Early Literacy: 1.4 follow and give directions in different contexts p.58

1.7 engage in simple oral presentations and respond to oral presentations p.58

1.4 Observe children's ability to finish tasks when more than one instruction is given. Do you have to give them the same instructions many times to finish what has been asked? P

Early Numeracy: 4.2 build and describe 3-D objects p.106

Grade One: General Curriculum Outcome 1: Science, technology, society, and the environment (STSE)—Students will develop an understanding of the nature of science and technology, of the relationships between science and technology, and of the social and environmental contexts of science and technology. P.9

General Curriculum Outcome 2: Skills and processes—Students will develop the skills required for scientific and technological inquiry, for solving problems, for communicating scientific ideas and results, for working collaboratively, and for making informed decisions. P.9

LS – 1 Distinguish between characteristics that make plants and animals unique p.27

LS – 2 Classify the characteristics and needs of living things p.27

Grade Two:
102-10 demonstrate how air, as a substance that surrounds us, takes up space and is felt as wind when it moves p.34

201-3 use appropriate tools for manipulating and observing materials and in building simple models p.34

203-1 communicate questions, ideas, and intentions while conducting their explorations p.34

Use appropriate tools in constructing a device to measure the speed and direction wind (201-3) p.35

Communicate questions and ideas about air while conducting explorations (203-1) p. 35

Grade Three: 201-2 Manipulate materials purposefully p.61

Identify materials that could be used to solve the problem posed, and suggest a plan for how they will be used (200-5) p.61

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1. Kindergarten Prince Edward Island Integrated Curricula: https://www.princeedwardisland.ca/sites/default/files/publications/eelc_kindergarten.pdf
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4. Grade Three Prince Edward Island Science Curriculum: https://www.princeedwardisland.ca/sites/default/files/publications/eelc_science_3.pdf

Activity Plan: Wind Sock

Approximate Time: 60 Minutes	**Details:**
Introduction	Today we will be learning about wind! What is wind? How does it feel on days when it's really windy? Do you think wind has energy? SURPRISE IT DOES! Will talk about that energy and its potential. We will either be making a windsock (grades K-3) or a puff mobile for grades 4-6, directions below
Detailed Timing	(Include a breakdown of the time required for each part of the session here) 15-20Minutes: Introduction Conversation/Presentation 1 Minutes: Create Wind Sock 10 Minutes: See how they work outside/with a fan 10 Minutes: Wrap up conversation. 5 Minutes: Clean Up
Activity	(The detailed plan for the activity should be written here. Any extra pages you will need for the activity such as step-by-step instructions, etc. can be linked in the resources section or added on the following page below this template) ☐ **Create Windsock:** ☐ On an piece of paper, draw and color the base

	of the windsock, 3 stickers max can be added. ☐ Cut out what color and size you want for the streamers (5 inches) ☐ Secure streamers to the bottom part of the windsock with tape ☐ Wrap the paper in a cylinder and secure with tape so the shape remains ☐ With a 6-8 inch piece of yarn, tape one end to the inside of the cylinder, and tape the other end of the yarn and tape to the opposite side inside the cylinder. ☐ Hang in a tree and measure how strong the wind is and what direction it comes from.
Clean-up	Get students to put their leftover pieces in the garbage that might be left on the floor from the activity.

4-6

Climate Education Resources

SUSTAINABILITY ACTION PROJECTS

K-5 ACTIVITY GUIDE

THE GAIA PROJECT PRESENTS:

10 Engaging activities for indoor and outdoor learning

- GET LOCALIZED LEARNING
- GET STUDENT-LED ACTIONS
- GET INDOOR THINKING
- GET OUTDOOR ENTHUSIASM

Land Acknowledgment

This document has been written and produced on the traditional and current unsurrendered land of the Wabanaki peoples, as covered by the Peace and Friendship treaties. This land belongs to their ancestors, their current members, and their future descendants. We are grateful for the opportunity to become allies of truth and reconciliation, sharers of knowledge, and to do our best to uplift Indigenous peoples in our work as we listen and learn about how we can contribute to decolonizing education.

The Gaia Project works in New Brunswick schools to empower students to take action on climate change through education.

contact@thegaiaproject.ca
https://thegaiaproject.ca/en/

This resource was funded by the Environmental Trust Fund

This project was possible thanks to support from the New Brunswick Environmental Trust Fund to help achieve objective #9 of the NB Climate Action Plan.

Acknowledgements

The Gaia Project gratefully acknowledges the partnership with The Department of Education and Early Childhood Development of New Brunswick (EECD MÉPDE) for consulting on the learning activities, and the contributions of the following groups and individuals toward the development of the Sustainability Action Projects: 10 Activities for actioning sustainable practices in New Brunswick Elementary Schools.

Learning communities

Salem Elementary School
Mi'kmaq-Wolastoqey Centre
NB Environmental Network
UNB Faculty of Education
Quartermain Earth Science Centre

INTRODUCTION

SUSTAINABLE DEVELOPMENT GOALS

The Sustainable Development Goals (SDGs), also known as the Global Goals, were adopted by all United Nations Member States in 2015 as a universal call to action to achieve a better and more sustainable future for all by 2030. The aim of the 17 Global Goals is to secure a sustainable, peaceful, prosperous, and equitable life on Earth for everyone now and in the future. Each activity has an accompanying logo (or more) in the top right corner to facilitate identifying the connections to the goals.

ETUAPTMUMK AND INDIGENOUS PERSPECTIVES

Settlers have acquired significant learnings from the Indigenous Peoples of the land. Some of these concepts are identified along with terminology in both Mi'kmaw and Wolastoqey languages which will be colour coded for identification. Etuaptmumk (eh-du-wup-du-monk) is a Mi'kmaw concept developed by Albert Marshall that infers the ability to understand the world through two perspectives, one Indigenous and one western influenced, or two-eyed seeing (Bartlett, Marshall & Marshall, 2012). Western knowledge and traditional knowledge offer two different perspectives but share characteristics for understanding how and why the world operates as it does. These activities will require students to use both world views to create understanding.

SUSTAINABILITY ACTION PROJECTS

TABLE OF CONTENTS

NOTE:

WATCH FOR CLICKABLE EXTERNAL WEBSITE AND VIDEO LINKS

CHAPTER 1: LEARN OUTDOORS

OVERVIEW

The learning activities presented in this chapter include key themes such as needs versus wants, personal hygiene, sustainability, and environmental awareness.

Students will be introduced to sustainable practices such as composting, reducing waste, observing water quality and taking age appropriate action to reduce the ecological footprint of schools.

Whenever possible, get your students outside to participate in these activities to encourage a human relationship to the land.

Allow students to become engaged, explore and attempt to explain their experiences using this adapted version of the 5E learning model.

PROJECT 1 :
COMPOST INVESTIGATION

GOAL :

Learn about decomposition and the benefits of composting organic matter while exploring what happens to materials that do not break down in nature.

A compost investigation led by grade 1 students at Salem Elementary School in Sackville, NB

MATERIALS :

- Shovel or digging spades
- Soil collected from a garden or nearby forest
- 6x glass jars
- Gloves
- Rabbit food
- Water

'BROWNS'

- Cardboard
- Dried leaves
- Straw
- Paper

'GREENS'

- Food scraps
- Fresh plants
- Grass clippings
- Manure

SPARK ACTIVITY

Read a story about worms, composting or decaying matter. There are a few stories to choose from in the literature catalog. Be sure to emphasize the process of decomposition and the word decay.

After the story, write down a recipe for compost. This includes greens, humus, soil and water.

This learning activity offers the great opportunity to practice Etuaptmumk (eh-du-wup-du-monk), two eyed seeing, through perspectives of western scientific investigations and the Mi'kmaw sustainability principle of Netukulimk (Na-du-ga-lumpk).

Explain that by using these valuable gifts from the Earth, we can create a nutrient rich soil to grow plants and vegetables. Netukulimk is a Mi'kmaw word used to describe the concept of using natural resources in a sustainable way.

By using the greens, humus and soil from the school yard, we are gifted a rich resource from the Earth to use responsibly in this investigation.

An example of a vermicompost bin full of worms hard at work.

The final ingredient for the compost recipe will include randomly selected items collected by students on the playground.

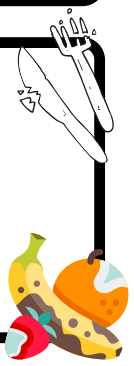
EXPLORE THE PLAYGROUND

STEP 1:

Head outside and divide students into groups to collect different ingredients for the experiment, allow for students to collect any items they think will decompose (including plastic, foil, etc).

STEP 2:

Return inside and lay out the random items collected to observe for the investigation. Encourage students to turn on their SUPER SENSES and make observations about the items using smell, touch and sight.



EXPLORE THROUGH INVESTIGATION

STEP 3:

Choose six of the random items to investigate and observe their ability to decay in compost. There are some key conditions that must remain the same for each jar, such as:

- How much soil goes in each jar
- The size of the jar
- Where the jar is placed during the investigation
- How much water the jar receives, etc

STEP 4:

Once students select the six items to investigate, place the items in separate jars and add the ingredients for composting (soil, greens, humus, rabbit food).

- Add a cup of water to each jar and you may even add worms (make sure each jar has the same amount/size of worms).
- Place lids on the jars. The lids must have small holes for air to get in and out.
- Allow students to draw or write some initial observations (use senses; smell, touch, sight).

STEP 5:

- Students will record observations of the jars for 7 weeks.
- Add water to jars occasionally. Use a spray bottle to not soak the soil.
- After the 7 weeks, record your final observations and estimate if you believe the items are decaying and why.

WAIT AND OBSERVE FOR 7-WEEKS

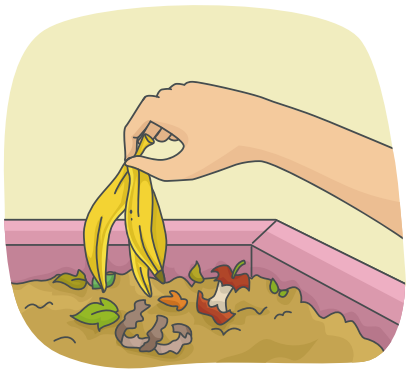
EXPLAIN WHAT HAPPENED

Explain the benefits of decaying matter for building healthy soil for plants and crops. Discuss the challenges of composting (smell, transporting soil, fruit flies, etc.)

Could a compost system work for your school?

EXTEND THE ACTION

Many schools around the province have student led composting initiatives to divert organic waste from landfills. These initiatives could lead to a school garden program for growing food and becoming a more sustainable school community.



Contact The Gaia Project for a current list of grants and resources.
contact@thegaiaproject.ca

15 LOVE NATURE

PROJECT 2 :

ANIMAL NEEDS

GOAL:

Explore the human impacts on animals from climate change by pretending to be squirrels! This experiential activity highlights the reliance wildlife have on their environment, changes in climate and the negative impacts of human activities.

MATERIALS:

- Chart Paper
- Blocks (red, green, yellow, blue)
- 20 Blankets/Towels
- Food Tokens

LOCAL CONNECTIONS

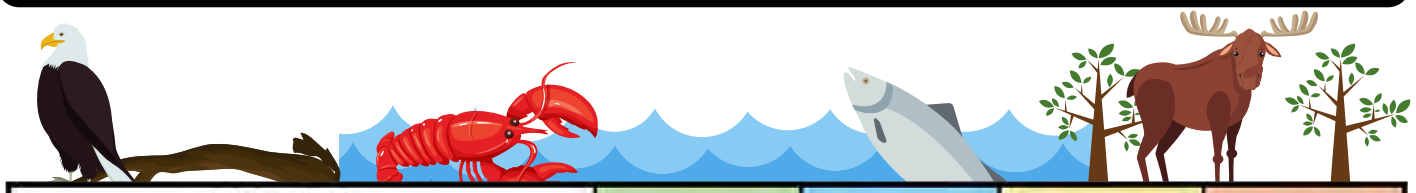
Seven-generation sustainability necessitates a sensitivity to the well-being of all living things seven generations forward and backward. Encouraging seven-generation sustainability can create empathy for species at risk. Atlantic Salmon require unpolluted cold streams and rivers for spawning. Dramatic changes in water levels because of alternating droughts and severe storms, plus overall temperature rise, serve to further endanger the salmon.

Learn more about species at risk in NB

SPARK ACTIVITY

Gather blocks of four different colours for a scavenger hunt. Blue blocks represent water, green blocks represent food, yellow blocks represent shelter and red blocks represent air. Distribute a few blocks of each colour around the classroom.

1. Bring students to a seated area and write some the following native species of New Brunswick on the board. Use English, Mi'kmaw, and/or French terminology for the animals.



Living Thing			Food	Water	Shelter	Air
English	Mi'kmaw	French				
moose	Tia'm	orignal	leaves	stream	tree cover	breathing
salmon	Plamu	saumon	insects	lives in	sea	gills
eagle	Gitpu	aigle	fish	food intake	nest	breathing
lobster	Jagej	homard	fish	lives in	ocean bottom	gills

2. Next introduce the 4 basic needs of animals. Pick a few examples and have students describe the ways the local animals meet their basic needs.

3. Have students take turns searching the classroom while moving like an animal of their choosing until they find a block of each colour.

EXPLORE OUTDOORS

The best way to explore animal needs is to go where the animals live. Practice place-based learning and bring students to an outdoor area with space to move around. Where better to learn about animal habitats than in the space that animals meet their needs?

ANIMAL NEEDS ROLE-PLAY GAME:

STEP 1:

Students cover themselves in a blanket to simulate a warm den in the winter season.

STEP 2:

On the facilitator's signal (audible or by gesture) "Spring", students collect as many food tokens as they can (food tokens are acorns, pinecones, etc.).
The term, "Wotokoniye" (woo-dg-nee-yeh) from the Wolastoqey language meaning the thawing of mother earth with warmer weather can be used as an audible signal.

STEP 3:

After collection has occurred, signal "Autumn", or use the Wolastoqey term for the autumn season, "Toqwa'q" (dohk·waahk), indicating that students must find a new den (blanket) to take shelter for another cold season.

STEP 4:

Stop the activity and explore how many food tokens each group of animals collected. Do your students understand that the success of the animal depends upon collecting food tokens for energy?

STEP 5:

Recognize that animals will achieve better health by gathering more food tokens. Discuss the role of animals in the warm seasons to meet their needs and prepare for cold seasons. Compare this to how humans prepare for the winter season.

PART 2

Reset the playing field by replacing the food tokens and have the students return to their winter shelters.
This time another group of students will be in a new role, Human builders. The builders will remove some of the food tokens in one area of the playing field making it harder for animals to meet their needs. Repeat the game with several scenarios in which the builders group interferes with the animal's tasks (i.e. remove tokens/shelters, etc.)

EXPLAIN THE CHALLENGE

Lead this discussion by revisiting the initial question, "What can we do to help animals meet their needs?" What human activities are restricting animals from meeting their basic needs?

How will extreme weather events impact local animals?

Have students share and record some ideas to preserve and enhance animals as they meet their food, shelter, water and air needs.

EXTEND THE ACTION

The next steps are up to your classroom. You can reach out for community support or apply for grants to implement an outdoor nature conservation corner. Suggest designating a "Wild Corner" of the playground that will remain a safe place for plants and animals to grow and flourish.

Contact The Gaia Project for a current list of grants and resources.
contact@thegaiaproject.ca

PROJECT 3 :

WATER KEEPERS

GOAL:

Learn about water conservation through observation of water and it's sources!

This experiment is designed to encourage students to ask questions about access to clean water and the impact pollution to water systems has on all living things.

Wolastoqiyik people standing along the edge of the water at French village, Kingsclear, celebrating Corpus Christi Day, ca 1887. Canoes, traditional dress, and a priest are in view. Photo credit: Provincial Archives of New Brunswick.

MATERIALS:

- 3 large water jugs
- Waste Items
- Water
- Journals

LOCAL CONNECTIONS

The Wolastoq River (Saint John River) formed the territory of the Wolastoqiyik and Passamaquoddy First Nations before the colonization of European settlers. The Wolastoq is the longest river in Eastern Canada and was one of the best transportation corridors for trade amongst Indigenous communities

Learn more about local watersheds in NB

SPARK ACTIVITY

Take students outside to explain the activity to them, encourage them to think about the ways that they use water that they home and at school.

Option 1:

Students can being this investigation by simply observing and playing with water. Find an area in the school playground to observe water. Where are the puddles? Where does water hold on the playground?

Challenge students to create dykes and dig channels and rainwater will travel through. This spark can be weather dependent by allow students to do the work in preparation for the next rainy day. Students will keep a close eye on their rain gardens and channels in the coming days as they anticipate the rain. Make sure they observe if the water looks clean and where they think the water is going to go next.

Option 2:

Follow a drop of water. This is a brainstorming and writing activity in which students will imagines the life of a drop of water. Where does it begin? What modes on travel will the droplet take? Think about the drains, taps, rivers, lakes, rain and snow transformations across their community. When is the water clean and safe to drink? When is the water not safe to drink?

EXPLORE THROUGH INVESTIGATION

Begin a 2-week investigation to observe the human impact of pollution on water sources.

STEP 1:

Add water (3/4 full) to 3 jugs and set in a safe area for daily observations.

Each day add a piece of organic waste to Jug A, a piece of inorganic waste to Jug B, and leave Jug C as a control.

STEP 2:

STEP 3:

Each day students will make observations on their water jugs. Students should use their eyes, their nose, and even their hands to describe the state of each jug. Do not recommend tasting the water.

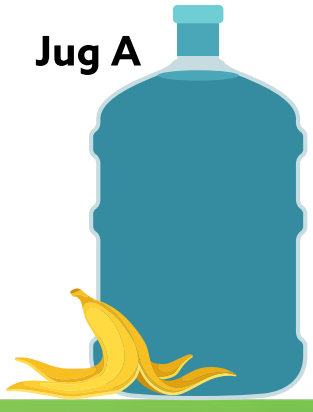
Ask students; which jug would you want to drink? Which jug is a good home for fish? Which jug could you wash your hands in? How could we filter the water in this jug?

STEP 4:

STEP 5:

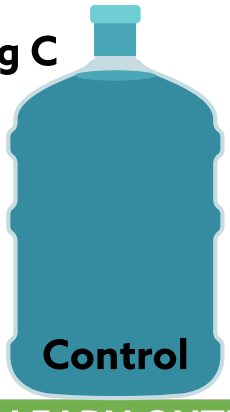
After 2 weeks take final observations and clean up the investigation.

Jug A



Jug B

Jug C



EXPLAIN THE IMPACT

Students have collected data using their senses to build an understanding of the importance of water quality.
Collect observations from the student investigation and create a concept map for each jug on the board. Avoid subjective terms like gross, yucky or weird.

Examples:

Foggy Murky
Dirty **JUG A** Stinky
Brown Bubbles

Crowded
Dirty **JUG B** Foggy
No Smell

Clear
Clean **JUG C** No Smell
Colourless

Ask students a variety of questions about the jugs:

- Which would they use to water flowers?
- Which would they want fish to live in?
- Which would they want to drink from?
- What are the main differences between organic/inorganic waste?
- Which jug smells the worst? What might that bad smell suggest is going on with the water?
- Where does water go after leaving the drain at our school?
- How could polluted water affect the life of a marine creature?

Allow students to draw conclusions based on their findings but reassure them that communities work very hard to protect clean water, but we can all do our best to reduce pollution by not wasting water.

EXTEND THE ACTION

The next steps are up to your classroom. Students should consider ways they can reduce water waste. They may even create posters to promote saving water at the fountains and sinks around the school. Learn more about the various NB Watershed Associations in your region and take this investigation into a higher level of action.

PROJECT 4 :

BIKE WALK ROLL

3 STAY WELL

GOAL:

This project requires students to gather data as the students of your classroom or even the entire school community contributes to protect our shared Earth by reducing pollution. The data platform for this project exists online and can be linked to daily routines in the morning, recess, or lunch hour.

MATERIALS:

- Computer
- Journals
- Chalk
- Bikes

Students learning more about electrifying transportation with the Electrify Your Ride program at The Gaia Project.

LOCAL CONNECTIONS

Harsh winter conditions can make it difficult to travel to schools and work, and public transportation is not available in all regions of New Brunswick. Pollution can be reduced by biking, walking, carpooling or even investing in electric vehicles which can significantly reduce the collective pollution of transportation. Schools all around the province can learn more about electrifying transportation with The Gaia Project and the NB Lung Association.

Learn more about EV programs in New Brunswick:

https://thegaiaproject.ca/en/programs/ **https://nb.lung.ca/DriveElectricNB**

SPARK ACTIVITY

Get students thinking about the impact of transportation and air pollution with this activity.

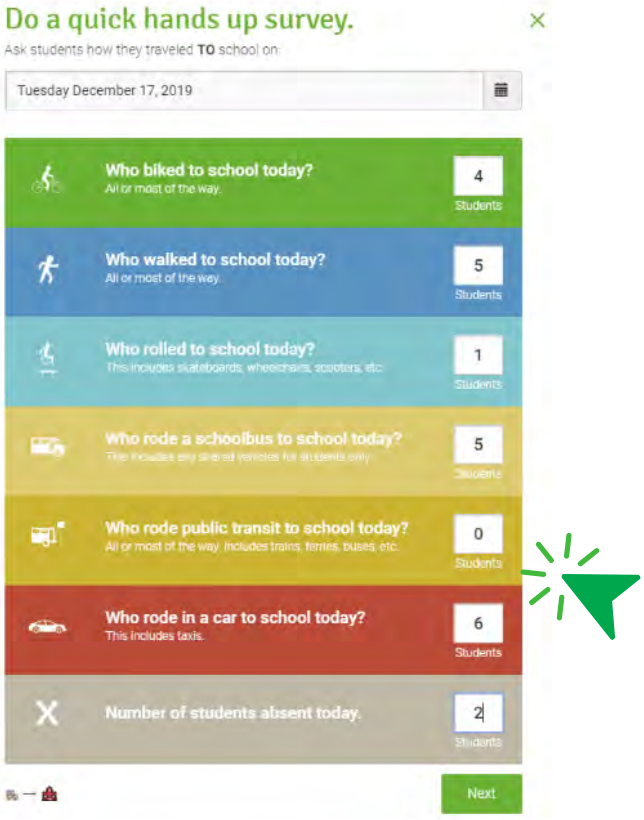
Ask your students to list all possible methods of transportation to school. List these options of transportation on the board. Next, ask students to brainstorm more creative ways to travel to school (i.e. air balloon, electric bus, stilts, etc.). Once a list is compiled ask the follow questions about each method of transportation.

1. What is the negative impact on the environment of this method of transportation?
2. Can you rank these methods of transportation based on positive impacts to human health?
3. What are the factors that influence their results? (distance travelled to school, weather, season, traffic, pollution, etc.).

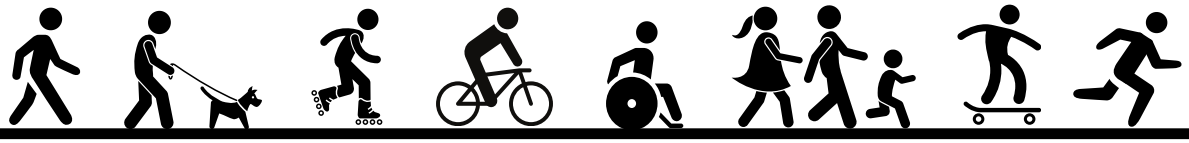
EXPLORE THROUGH DATA COLLECTION

Inform students that they will be collecting data to share with a Canada-wide project called Bike, Walk, Roll.

survey found @ https://bikewalkroll.org/



Your class will sign up online and each day submit data on how many students in the class biked, walked and rolled to school. Do not allow for students to feel guilty about the pollution generated to travel to school as this is out of their immediate control. Remind students that the goal is to have a collective impact as an entire school community, students, staff and parents.



As students become more confident with this online tool, expand the project to gather school wide research. Surveys become more accurate and powerful with increased sample sizes. The more students surveyed, the more informative the results. Students may use class time to create chalk or paint prints from local neighbourhoods to the school yard. This will support a safe Bike, Walk, or Roll to the school in the mornings. Give each group different classes and grade levels to collect data from each day, or once a week. Be sure other teachers are on board by explaining the positive impact students are promoting.

EXPLAIN THE IMPACT

The website has some amazing tools to show students the impact they can have by encouraging their school to bike, walk or roll and reduce GHG emissions.

Present this powerful data to your school administration or district team to encourage other schools to be leaders in sustainability projects like Bike, Walk, Roll. Encourage students to walk or bike to school safely by drawing chalk footsteps on nearby sidewalks to the schoolyard.

EXTEND THE ACTION

The next steps are up to your classroom. Students can go further raising awareness about reducing transportation emissions in a safe manner. Some schools paint or draw fun footsteps leading from surrounding neighbourhoods to the school property for safe biking, walking and rolling to school.

Option 1:

How does reducing pollution make for a healthier environment for students? This initiative is extremely beneficial to the physical health of your students. Raise awareness with posters or have your students record a podcast about the benefits of the Bike Walk Roll program.

Option 2:

Is public transportation available in your region? If not, how come? What restrictions would your community have from riding the bus? Get creative about ways to reduce the transportation pollution in your region. Survey locals to get their opinion.

Option 3:

You can use the ESRI Story Maps tool to learn more about bicycle transportation in your region or explore what other Canadian cities have done to display their data.

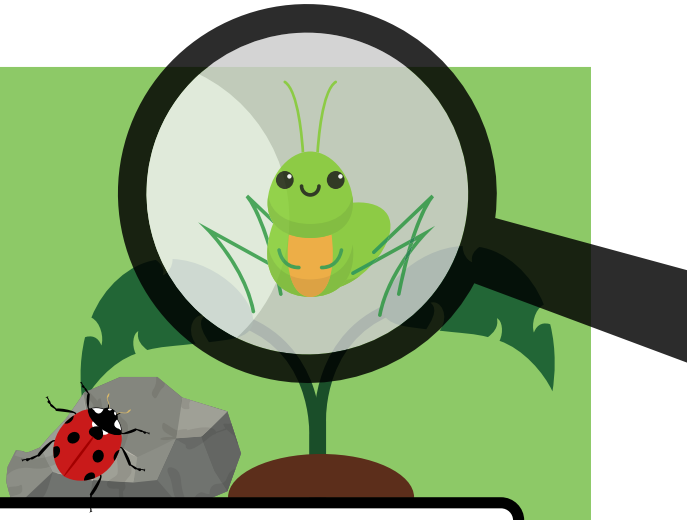
PROJECT 5 :

BUDDING BIOLOGISTS

15 LOVE NATURE

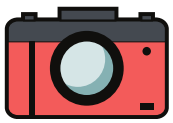
GOAL:

Use the power of observation, and curiosity to explore and learn about the natural world. Take seasonal notes on plants and wildlife around the school grounds (and beyond) to generate a class discussion.



MATERIALS:

- ~20 leaves (in pairs)
- Weather-appropriate clothing
- Notebook
- Pencil crayons, crayons, pencil and/or markers
- Camera (optional)
- Reusealable plastic bag (optional)



LOCAL CONNECTIONS

There are many organizations in NB that work to conserve wildlife. Encourage students to look them up at home with their families to get a better understanding of the work that these organizations do:

- Nashwaak Watershed Association
- Ducks Unlimited
- Nature NB
- ACAP
- Nature Trust NB
- Conservation Council NB

SPARK ACTIVITY

Get students exploring leaf shapes while practicing their drawing skills

Before this activity:
Collect 10-12 pairs of leaves from your school yard or surrounding area OR use printable leaf cut outs from this link.

1. Place the leaves into a hat or box for students to draw from.
2. Have students randomly select a leaf from the hat until each student has a leaf.
3. Inform students that they must find another student with the matching leaf shape.
4. Once students locate a partner they must then use their notebooks to draw the leaf to the best of their abilities.
5. If there is time left over have students swap leaves and draw a second shape.

EXPLORE YOUR SURROUNDINGS

Get Ready! Before heading outside, make sure you and your students are appropriately dressed for the weather.
Option: You can pack your field notebooks or leave them in the school to work on later.

Go Outside! Head towards an area that has become naturalized (perhaps there's a forest nearby). Nature is all around us, even in dense cities.
Observe nature with your students as you walk down a sidewalk, wander through an alley, visit a park, or even on the playground.
If you have access, explore a forest, a pond, a farm, the seaside, a lake, a community vegetable garden, a riverbank or a bog, then go for it!

RECORD YOUR OBSERVATIONS!

Remind students that they're going to be recording things that they can see in the area around them in their field notebooks.

- **What Are Field Notes?**

Field Notes include the date, location, drwaings, and some basic observations about what you've found as you are in the place of observation.

Field Notebook Idea #1: Mindful Observation

Invite your students to look around and see what interesting things they can find.

What senses are they using tp observe? Some examples:

- LOOK at the different colours of flowers or leaves
- SMELL the different types of plants
- LISTEN for any nearby creatures
- Do you recognize any plants or animals? Write down their names.
- LOOK for different types of seeds, what animals eat them?
- LOOK for big objects and small objects, soft objects and rough objects!

Field Notebook Idea #2: Seasonal Changes

Have you students pick their own 'special tree' to observe throughout the school year. Encourage them to research the tree species (Plant ID app), and some interesting facts about it.

Each month, have your students visit their tree and write down field notes or make a drawing about changes that they observe through the seasons.

Make some observations with your students about their tree:
Is this a coniferous tree or deciduous tree? Hardwood or softwood?
Does this tree produce nuts? pinecones? fruits? flowers?
What do the leaves look like? feel like? smell like?
Describe the colour and texture of the bark.
Do you notice any roots coming out of the ground?
Do you notice any signs of other critters living in or near your tree?

Each time you visit the tree, notice what has changed since your last visit and record these observations in your field notebook.

REFLECT ON NATURE

Once you're back in class, take out your findings and lay them out on a table or present around the room on the walls. Encourage your students to study the textures, colours, smells, and patterns of each object.
You and your students have just spent a great deal of time absorbing nature's beauty. How did it make your students feel? What kind of emotions do they experience when they observe nature?
Consider the principles of the Honorable Harvest, an Indigenous world view or 'rule of thumb' before taking anything to inspect further in class.

EXTEND THE ACTION

Plant some edible trees and shrubs at school for some exciting harvests with your students. Some local varieties include:
Haskap berries (June) - Strawberries (June)
Apples and Pears (September/October)
Grapes and Blackberries (September)
Remember to plant in an area that receives full sun and is protected from harsh winter winds. Make sure to fertilize and minimize air pockets when placing in hole and give it a good soak! In the first few summers it may require some water during dry spells.

CHAPTER 2: LEARN INDOORS

OVERVIEW

The learning activities presented in this chapter are linked to key themes including provincial identity, sustainability, leadership and environmental disposition.

Students will be introduced to sustainable practices such as eating local foods, environmental awareness, reducing waste, investigating resource extraction, and taking age appropriate action to reduce the ecological footprint of the school.

There may still be opportunities to get your students outside to participate in extension activities, or to make connections to the outdoor learning investigations.

Allow students to become engaged, explore and attempt to explain their experiences using this adapted version of the 5E learning model.

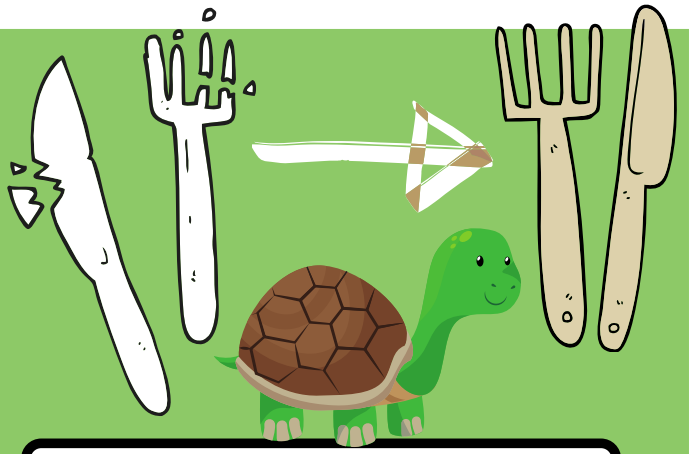
PROJECT 6

PLASTIC AWARENESS

12 LIVE BETTER

GOAL:

Learn about plastic and how most of it ends up in the landfills, our oceans and waterways, and the environment. Tackle the challenges of single-use plastics with your students and investigate the types that they may encounter bother at home and in school.



MATERIALS:

- Poster Board
- Plastic Waste
- Art Materials

Globally, researchers estimate that the production and incineration of plastic will pump more than 850 million tonnes of greenhouse gases into the atmosphere annually.

LOCAL CONNECTIONS

New Brunswick's Regional Solid Waste Commissions have realized that the key to finding a market for our recyclables is to provide a steady supply of clean, sorted product. Different plastics have different properties, so even a small amount of the wrong type can ruin a 'melt' of recycled plastic.

Learn more about plastic recycling in NB

SPARK ACTIVITY

Watch these videos and start a discussion with your students about how waste has impacted their lives or the lives of someone they know.

Here are two videos that explore how plastic waste impacts habitats:

1) Youtube Search: All the Way to the Ocean

This 15-minute video follows two friends as they discover the relationship between plastic pollution and the health of rivers, oceans and marine life.

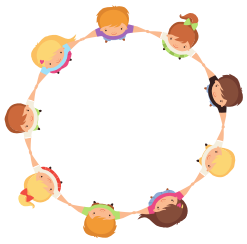
2) Youtube Search: A Whale's Tale CBC Kids

This 3-minute video follows a Whale and other marine animals impacted by human pollution.

EXPLORE THROUGH MOVEMENT

STEP 1:

Students form a large circle, seated and hold hands. The interior of the circle represents the ocean.



STEP 2:

Select 4 students to move around the ocean as marine animals. They can move anywhere in the circle, but they may not touch any piece of plastic or they are out of the circle.

STEP 3:

Place plastic bottles and bags the ocean, making it more difficult for the marine organisms to move throughout the circle.

STEP 4:

Continue to add plastic in intervals until the students, find it difficult to move freely.

EXPLAIN PLASTIC

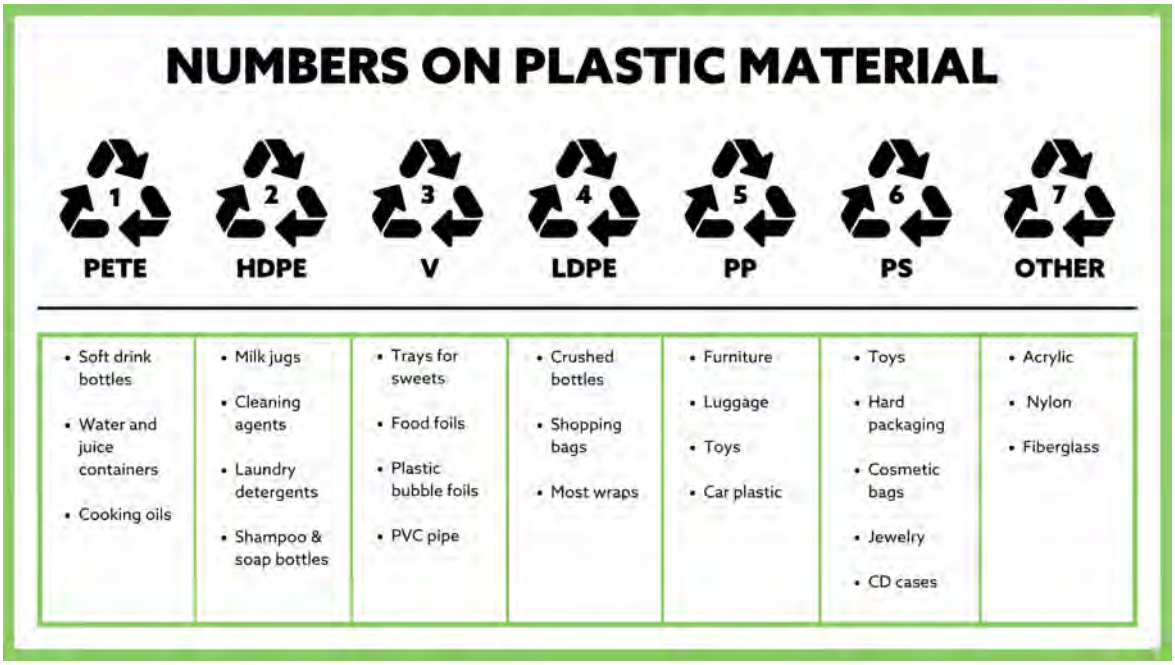
Students observe that plastic waste impacts the habitats of many animals. When plastics break down, they don't biodegrade; rather, they break into smaller pieces, many of which end up in the oceans as microplastics that harm aquatic life and birds.

Discuss how plastic is manufactured in a factory and used to package many of the products we use daily. Ask students to identify products they use daily that use plastic. There are symbols and numbers on most plastic products to signify their chemical make-up. Have students investigate the plastics from the first activity to find these symbols and numbers.

Recycling agencies use these numbers to determine which plastics can be recycled and repurposed. Some of these plastic products are unsafe to reuse for eating or drinking, including common #1 water bottles.

EXPLAIN PLASTIC

Plastic can and has been made from other sources, including plant-based materials such as fibres and starches, but fossil fuels are still relatively plentiful and inexpensive, and plant-based products also present environmental challenges (see Appendix II to find the recycling and waste commissions in your region).



EXTEND THE ACTION

The next steps are up to you! Reach out for community support or apply for grants to implement plastic diversion programs.

Project Grants

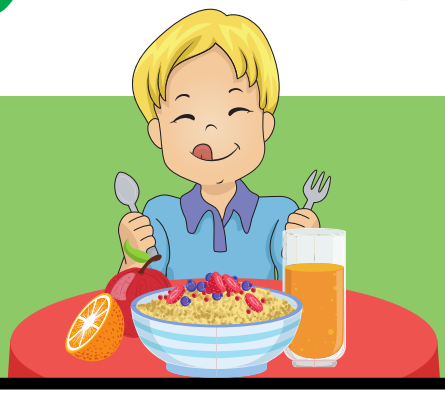
- **Place Aux Compétences**
- **Rising Youth Canada**
- **Pitch-in Canada**
- **Environmental Trust Fund**
- **Canada Post Community Fundation**

Contact The Gaia Project for a current list of grants and resources.
contact@thegaiaproject.ca

PROJECT 7

TRAVELLING FOOD

2 EAT BETTER



GOAL:

Explore the food items we consume daily and how buying local is better for the environment and the economy. Encourage students to bring in food packaging from home to identify which region or country the item came from for this project.

MATERIALS:

- Food containers
- Meter stick
- Maps
- Computers
- Journals

Students hold up their homemade reusable snack bags after working with The Gaia Project.

LOCAL CONNECTIONS

New Brunswick has a variety of natural resources that people have accessed for thousands of years. Two local food resources include fiddleheads and maple syrup. Fiddleheads are picked in the spring near rivers and streambeds while maple syrup is made from the sap of the sugar maple tree. Indigenous Peoples of New Brunswick have been accessing these foods for thousands of years and Mahqankahtimok (mah-gwan-gaht-dee-mog) is the Wolastoqey term for the gift of maple sugaring time.

Learn more about local products of NB

SPARK ACTIVITY

Introduce the Esri Story Maps tool with your classroom. Find the location of a local farm, market, or food production factory and create a simple story map to demonstrate the transportation required for these food products to get to your community. How far did these products have to travel?
To learn more about Story Maps click here.

EXPLORE THROUGH INVESTIGATION

Students are encouraged to collect food packaging from home that would normally be thrown out. Request that students rinse out cans, cartons, cardboard boxes, and/or plastic containers.
Use these packages to investigate the country of origin of these products. To help locate this information you may use the Canadian Food Inspection Agency CFIA label guide.
Record the locations where these products are produced and have students research the distance these foods travelled to get to your community using Google Maps.
The process of food manufactory can be complex, so for the purposes of this activity just ask students to work with the location marked on the food packaging. Sometimes an estimation will be the best measure.

Nutrition Facts
Valeur nutritive
Per 1 cup (250 mL)
pour 1 tasse (250 mL)

Calories 110	% Daily Value* / % valeur quotidienne*
Fat / Lipides 0 g	0 %
Saturated / saturés 0 g + Trans / trans 0 g	0 %
Carbohydrate / Glucides 26 g	
Fibre / Fibres 0 g	0 %
Sugars / Sucres 22 g	22 %
Protein / Protéines 2 g	
Cholesterol / Cholestérol 0 mg	
Sodium 0 mg	0 %
Potassium 450 mg	10 %
Calcium 30 mg	2 %
Iron / Fer 0 mg	0 %

*5% or less is **a little**, 15% or more is **a lot**
*5% ou moins c'est **peu**, 15% ou plus c'est **beaucoup**

Click to read more on food labelling format

EXPLAIN FOOD MILES

Display the data collected by students in kilometres on the board. Create a visual scale for students to observe this data.
You can trace a meter stick on the board which will represent 10,000 KM or a value of distance that students in your classroom will comprehend.
Demonstrate the process of charting your data with an item you've brought from home. For example, if the item is a pack of hot dogs from Manitoba, use a computer to find the distance these hot dogs have travelled and draw a line to represent the distance in relation to your scale (10,000 KM or other).

Students can now observe which products traveled the longest to reach their local community. How did the food travel (boat, plane, truck)?
How much gasoline or jet fuel might have been burned into greenhouse gases (GHG) to deliver these products to New Brunswick? How do we avoid contributing these emissions?
Can we find products like these at the local markets?

Continue to add to the chart for a few weeks and observe if the lines become shorter over time.

EXTEND THE ACTION

The next steps are up to your classroom. Students can consider ways they can reduce their ecological footprint by learning about and buying local foods. Visit the local markets of your community and find out what food products are grown in New Brunswick.

Option 1:

Learn more about our relationship to ugly fruits and vegetables. What form do these foods naturally take on? Do they taste any different?

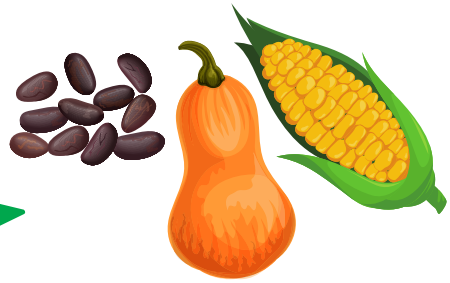
Where to learn: Article of Ugly Fruits

Where to engage: Activities for Students

Option 2:

Mawihpuwok is a term used in the Wolastoqey language meaning 'they eat together'.

Research the traditional foods of local Indigenous communities in the province. Check out the Wabanaki collection for more great resources.



Option 3:

Have your class design a recipe book with a delicious menu provided by your own community. Reduce food miles and celebrate your provincial identity with Acadian, Wabanaki and other traditional dishes.

PROJECT 8

MINE YOUR BUSINESS

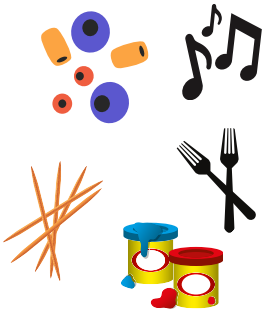
9 MAKE SMART CHOICES

GOAL:

This lesson will allow students to investigate the impacts of mining natural resources required for energy production and the development of industry. Students will consider protecting the natural habitats of living things, the economic influences of different nations, and explore alternative approaches to promote sustainability.

MATERIALS:

- Play-Doh
- Forks
- Music
- Various types of beads
- Toothpicks
- Other tools



New Brunswick's Picadilly Potash mine started production in 2014.

LOCAL CONNECTIONS

New Brunswick's complex geological past has given rise to a diversity of metallic mineral resources and has shaped our landscapes, communities and economy. The province as we know it was formed over the last billion years forged by moving continents, changing climates and complex geologic processes. Metallic mineral deposits may contain metals such as copper, lead, zinc, and iron; precious metals such as gold and silver. Industrial rocks and minerals are plentiful in New Brunswick, including gravel, gypsum and lime.

Learn more about mining in NB and Earth Science Literacy

SPARK ACTIVITY

Dance Game:

Ask four students to come to the front of the class!

- **Student 1 will be attracted to wooden objects**
- **Student 2 will be attracted to metal objects**
- **Student 3 will be attracted to plastic objects**
- **Student 4 will be attracted to glass objects**

This game is like musical chairs. Use your computer or cellphone to play a song and have the four participating students dance and move around the room freely, but when the song stops the students must quickly find the nearest material they are attracted to and touch it. The last student to do so can return to their seat and be replaced by another.

Continue this activity a few rounds and make observations which materials are easiest to locate around the classroom.

- Where did these materials come from?
- Are they man made or natural resources? If so, where did they come from?

Find out what students know about materials that are mined from underground.

EXPLORE HANDS-ON

Before the activity randomly mix various shapes and sizes of beads into containers of Play-Doh. Students will be working with a large slab of Play-Doh, trying to extract these beads with tools. Time to introduce the students to Play-Doh. Be sure to enforce that the Play-Doh is not to be played with, but instead treated as a scientific tool.

1) Break students into groups of 4 or 5 and move each group to a different region of the classroom. Have each group pick a name of their mining company and write it on the board.
2) Give the same 'mining tools' to each group. Start with a few toothpicks.

3) At the right price, students can upgrade to use forks, tongs, paperclips, pencils, or whatever you choose from around the classroom. Just be sure to have a variety of items for mining.
4) Give each group an equal chunk of Play-Doh and provide the rules:
- You may not touch the Play-Doh with anything except the mining tools.
- Beads must be extracted from the Play-Doh.
- No Play-Doh residue should be left on the beads.
- Work as a team or beads will be taken from your company.

EXPLORE MINING OPERATIONS

Allow students to work through the first load of Play-Doh. While students are busy prepare the following:

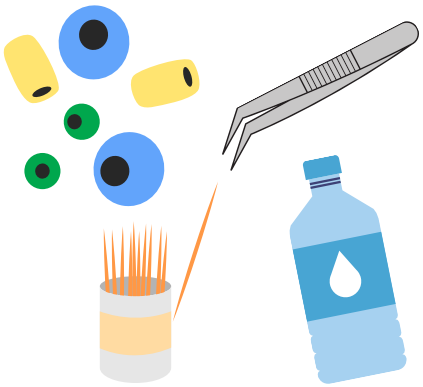
- Introduce a value per bead chart. See different example charts below. The beads may have more value based on size, shape or colour. Inform students that they can now trade clean beads for company value. Prepare a tally on the board to display each companies earnings at the end of the activity.
- Display an equipment upgrade chart for students to access throughout the activity. Student groups can invest their bead earnings to buy new equipment. Here are some ideas how to display these items.

VALUE PER BEAD AND EQUIPMENT UPGRADE CHARTS

Bead Type	Bead Value
Small	$1
Medium	$2
Large	$5

Bead Type	Bead Value
Blue	$1
Yellow	$2
Green	$5

Equipment Upgrade	Cost per Item
• Toothpick	$1 worth of beads
• Fork	$5 worth of beads
• Tweezers	$10 worth of beads
• Cup of Water	$10 worth of beads



EXPLAIN THE CHALLENGES

End the hands-on activity and examine how each company did with bead extraction. Students must do some math to determine their company's total earnings. Write each company total on the board. Now it is time to clean up.

Land Reclamation: Mining is a particularly important industry in many communities across Canada. Members of our society rely on many mining projects to build our cities and use everyday household items that are taken for granted. However, a balance must be agreed upon as the environmental impact can be devastating.

Students must now begin to clean up their mess and put the Play-Doh back in the state that they received it. Give each group a few minutes to for Play-Doh reclamation. The group with the messiest station could be issued a fine for environmental damages. This fine will be reduced from their company profits.

EXPLANATION CONT...

Did this fine have a major impact on company earnings? Was it worth cleaning up the mess to avoid the fine? Does this happen in real life?

Discuss the mining of fossil fuels, uranium, metals and other resources. These resources, like the beads, are not renewable and once used up take very long time to reform in the Earth. Mining is an important industry in many communities across Canada. We rely on many mining projects to build our cities and use everyday household items that are taken for granted. However, a balance must be agreed upon as the environmental impact can be devastating.

Explore the mining waste hierarchy table and reflect on the bead extraction activity. How could students have reduced, reused or recycled the Play-Doh waste?

EXTEND THE ACTION

The next steps are up to your classroom. Consider contacting local outreach groups for a classroom visit or additional educational

NB Virtual Museum Rocks Exhibit
Quartermain Earth Science Centre
Stonehammer UNESCO Geopark

Keep with the current developments around SDG #9!

12 LIVE BETTER

PROJECT 9

WASTE-FREE LUNCH

GOAL:

Encourage students to start practicing a reduce-first method of waste diversion by bringing reusable containers for lunches and snacks. The goal of this activity is to reduce waste as a class and potentially as a school community and explore alternative packaging for food.

MATERIALS:

- Reusable Containers
- Letters to parents
- Balance scales
- Beeswax
- Cotton Sheets
- Wax Wrap Recipes

Bringing in reusable snack bags and straws can help cut down on a lot of plastic waste in schools and you can even make your own bags with students or at home!

LOCAL CONNECTIONS

Reducing waste at the school can have significant direct and indirect impacts. If schools can lead the way with a waste reduction mentality, houses and businesses in the community are likely to follow. Students can share these ideas and practices with parents and vote with their dollars to eliminate the need for single-use wrappers and bags used to package food and other items.

Learn more about waste free lunches in NB schools

SPARK ACTIVITY

Once a day for a week, your class will need to use a scale and weigh the classroom trash bags. Write down the total weight of trash during the week of normal snack and lunches. Display this data on the board for students to observe.

Read the book, "Where does our garbage go?". Ask students where the garbage from the school goes. Does it all get recycled like in the book? Can we do better to sort or reduce or garbage?
Challenge students to reduce the garbage generated in the classroom by targeting recess and lunch time garbage.

EXPLORE WASTE REDUCTION

Students can work with you to draft a letter for parents and guardians that describes an initiative to reduce waste at snack and lunch time. An information sheet on what food items to avoid might help.
It is important to note that there could be socio-economic issues to this initiative if families can't afford reusable containers for their children. Food can be a topic that causes discomfort and highlights inequities amongst students, but this can be explored through the activity. Discuss challenges some families have with keeping the refrigerator full of healthy food. How can we help each other eat well and reduce waste as a team of learners?

Raise awareness around the school about this initiative and seek out reusable containers from teachers, community partners, and other parents at the school. Use this collection of reusables for all students in your classroom to reuse each day through the week.
Begin the action project and be sure to discuss the importance of reducing and reusing each day.

EXPLAIN ECOLOGICAL FOOTPRINT REDUCTION

Weigh the trash bags at the end of each day for a total of 5 days of waste free lunches.
Compare these weight values with those collected before the waste free lunch project.
How much waste reduction was generated by students?
What would happen if the whole school completed a Waste-Free Lunch project?
Waste reduction can reduce the ecological footprint of our schools. We will require less garbage bags and less garbage transported in trucks around our community. Less trucks on the road means lowering emissions sent to the atmosphere.

EXTEND THE ACTION

The next steps are up to your classroom.

Reusable Beeswax Wrap:

You may choose to create reusable food packaging products such as beeswax wrap. This activity does require heat and may not be safe with young students, but you can share the recipe with parents.

Sorting Waste:

Students can consider ways they can reduce and reuse school waste. Contact your local waste commission about school waste diversion upgrades and improved infrastructure.

Contact your local Waste Commission to talk about waste in your area and for more potential programs (see appendix)!

PROJECT 10

TRASH TRACKER

12 LIVE BETTER

GOAL:

Students will take meaningful action to recycle, reduce or reuse waste items from their school, by developing a basic understanding of sorting waste items.

The Trash Tracker activity requires students to develop accountability for their own contribution to the human impact on the environment by creating waste.

MATERIALS:

- Trash
- 6 Buckets or Bags
- Tarps
- Sorting Bins
- Gloves
- Scale

Students preforming a waste audit to find out how much waste could be diverted from the landfill.

LOCAL CONNECTIONS

The Gaia Project works with schools, local waste commissions and the government to educate students about sorting waste and improving the sorting process at the school level. The Trash Tracker program is engaging, educational and safe to conduct with the right materials.

Learn more about NB Waste management

SPARK ACTIVITY

Bring students outdoors to the playground or a similar community area to locate trash. Using gloves students can collect trash items but be sure to keep a tally of any plastic, paper or compostable items to examine back at the classroom.

Return to the class with at least 20 items and examine with the group. Look for different types of materials (plastic, paper, food waste, etc). Challenge students to imagine where these items could have ended up if they were not thrown on the ground.

EXPLORE BY SORTING

The Trash Tracker project requires collection of garbage bags at the school for 2-3 days. Work together with your custodial staff to prep trash for the activity. Do not save trash any longer than 3 days health and sanitation protocols.

STEP 1:

Set up a tarp in the middle of the classroom and place a sorting bin on the tarp.

STEP 2:

Brainstorm with students up to 6 sorting categories for trash. Categories can include types of plastic, metal, electronic, refundable, paper, Styrofoam, compost, etc. Allow creativity but try and synchronize categories to the local sorting requirements of your region.

STEP 3:

Divide students into groups based on the categories they have determined. Each group will be responsible to sort a single category.

STEP 4:

Weigh the trash bags collected after 2 days and record the weight on the board. This weight will be significant in explaining the impact of reducing waste and recycling.

STEP 5:

Pour some trash into the sorting bin, ask students to put on gloves and then one at a time ask groups to come up and sort out their materials.

STEP 6:

After each group sorts out the recyclable materials, the remaining trash should be put into a separate trash bin. Dump more trash into the sorting bin and repeat the process.

EXPLORE BY SORTING

Once the sorting is completed each group must weigh their bucket of materials. Write down each value on the board and have students determine what percentage of trash they may have saved from the landfill.

Introduce the Esri Story Maps tool with your classroom. Find the location of the local landfill. Create a simple story map to demonstrate the travel of garbage trucks to transport this school waste to your community landfill. How far would these products have to travel?

Share your story with the Story Maps tool!

EXPLAIN THE IMPACT

By reducing the amount of waste sent to the landfill, your school has reduced the level of greenhouse gases emitted by garbage trucks travelling to the landfill. Hopefully, your students feel positive that they have reduced their waste at the school, but now it is time to ask some hard questions.

Where does the sorted material go next?

- Plastic and paper must be separated properly, and often single-use paper products are created with plastic coatings. These materials cannot typically be recycled. Paper waste must be clean to be recycled. Contamination from water, food or other substances can ruin an entire batch of recycled paper.
- Electronic waste must be taken to a designated area. Most schools do not have curbside pick-up as it can be expensive. This makes recycling programs difficult to achieve.

Think about reducing, reusing and refusing certain waste items before having to recycle.

EXTEND THE ACTION

The next steps are up to your classroom. Students can improve the waste sorting process at their school. Are the recycling containers marked and presented in a logical way?

Students may be more interested in higher level systems of waste diversion. What are the regional and provincial policies to sort and recycle, reduce or reuse waste items?

How do we make the producers of plastic packaging accountable for all the single-use waste items in our classroom?

Write a letter to your regional waste commission to learn more about these issues. Explore critical justice citizenship and learn about what our provincial leaders can do better to reduce waste in your community.

Learn more about Recycle NB Regional Commission Programs

EXTEND YOUR ACTION

The next steps are up to your classroom. You can reach out for community support or apply for grants to implement plastic diversion programs.

Project Grants

- Place Aux Compétences
- Rising Youth Canada
- Environmental Trust Fund
- Canada Post - Community Foundation

Contact The Gaia Project for a current list of grants and resources.
contact@thegaiaproject.ca

Students should consider ways they can contribute by:

1. Helping clean the school yard or other nearby community areas.
2. Creating posters to spread awareness about the dangers of single-use plastics.
3. Improving school plastic sorting practices.
4. Creating a collaborative art project with plastic waste materials in the school.
5. Crafting reusable grocery bags from old, donated clothing.
6. Completing Project #9 Waste Free Lunches.

APPENDIX ITEMS

- WORD WALL
- COMMUNITY PARTNERS & SCHOOL GRANTS

WORD WALL

COMPOST INVESTIGATION

COMPOST – DECAY – DECOMPOSE – SOIL – FUNGUS – INSECTS – HUMUS – RECYCLE – REDUCE – ETUAPTMUMK – NETUKULIMK – NIPI – OQOQIAQ– WETI

Compost (noun) - a mixture largely of decayed matter of once living things (as grass) or their products (as coffee grinds) and used for fertilizing and conditioning land.

Etuaptmumk (eh-du-wup-du-monk), two eyed seeing, through perspectives of western scientific investigations and the Mi'kmaw sustainability principle of Netukulimk (Na-du-ga-lumpk).

Humus (noun) - a brown or black product of partial decay of plant or animal matter that forms the organic portion of soil

Netukulimk (Na-du-ga-lumpk) is a Mi'kmaw word used to describe the concept of using natural resources in a sustainable way.

Nipi (noun) – Mi'kmaw term for a leaf (of tree).

Oqoqiaq (noun) - Mi'kmaw term for fungal growth on damp or decaying matter.

Weti (noun) – Mi'kmaw term for a worm.

ANIMAL NEEDS

ANIMALS – AUTUMN – FOOD – HABITAT – HUMAN – NEEDS – PLANTS SEASON – SEVEN GENERATION – SPRING – SHELTER – TIA'M – TOQWA'Q – WOTOKONIYE

Habitat (noun) – the type of environment in which a group of organisms normally lives in.

Seven-Generation Principle (noun) - based on an ancient Iroquois philosophy that the decisions we make today should result in a sustainable world seven generations into the future.

Tia'm (noun) – Mi'kmaw term for moose.

Toqwa'q (dohk·waahk) - a Wolastoqey term transliterated as 'It is Autumn'. Term gifted by Elder Imelda Perley.

Wotokoniye (woo-dg-nee-yeh) - from the Wolastoqey language meaning the thawing of mother earth with warmer weather

WORD WALL

WATER POLLUTION

CLEAN – CLEAR – DRAIN – DRINK – FILTER – MURKY
OCEAN – RIVER – SMELL – SAMQWAN – SIPU – WOLASTOQ

Passamaquoddy (noun) - an American Indian/First Nations people who live in northeastern North America, primarily in Maine, United States, and New Brunswick, Canada.

Samqwan (sam·hkwan) – Mi'kmaw term for water.

Sipu (noun) – Mi'kmaw term for river.

Wolastoq (wool-luss-took) (noun, adjective) - beautiful and bountiful river renamed St. John. Wolastoqey adjective for things i.e. food etc.

BIKE WALK ROLL

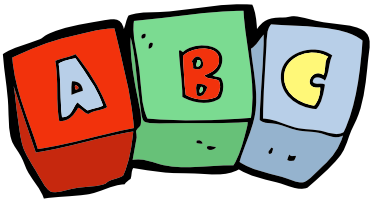
AIR QUALITY – DISTANCE – EMISSIONS – GWITN – HYBRID –
IDLE – POLLUTION – SURVEY – TRANSPORTATION

Emissions (noun) – something that has been released or emitted into the world. Car exhausts or radio transmissions are examples of emissions.

Gwitn (noun) - Mi'kmaw term for canoe.

Hybrid (adjective) – a thing made by combining two different elements; a mixture.

Survey (verb) – to ask (many people) a question or a series of questions in order to gather information.



WORD WALL

BUDDING BIOLOGIST

BIOLOGIST – CONSERVATION – FIELD NOTES – NATURE – OBSERVATIONS – OPOS – PUNASQAHTOQ – SPECIES

Field Notes (noun) - notes recorded by scientists or researchers in the course of field research, during or after their observation of a specific organism or phenomenon they are studying.

Opos (uh-pus) is the Wolastoqey term for tree.

Punasqahtoq (pu-na-squat-took) is the Wolastoqey term for leaf bud.

Species (noun) In biology, a species is the basic unit of classification and a taxonomic rank of an organism.

PLASTIC AWARENESS

CONTAMINATE – LANDFILL – MARINE – MICROPLASTICS – OCEAN – RECYCLE – REDUCE – REUSE – SUKAYEWOTIKON

Contaminate (verb) - to make impure or unfit for use by adding something harmful or unpleasant.

Landfill (noun) - the site used for such waste disposal or the waste disposed of.

Microplastics (noun) - extremely small pieces of plastic debris in the environment resulting from the disposal and breakdown of consumer products and industrial waste.

Sukayewotikon (sook-ay-yay-wo-tay-kun) is the Wolastoqey term for 'anything thrown away' i.e. trash, garbage; slop, toilet contents, sewage.

WORD WALL

TRAVELLING FOOD

EMISSIONS – LOCAL – FIDDLEHEADS – INGREDIENTS – MAWIHPUWOK – MARKET – PACKAGING – PRODUCTION – TRANSPORT – APATOQ – MIJIPJEWEI – MAHQANKAHTIMOK

Apatoq (a·ba·dohk) – Mik'maw term to set aside a portion of food.

Fiddleheads (noun) a wild edible plant that is harvested along riverbanks in the springtime

Mawihpuwok (Mah-wee-pu-wuk) is the Wolastoqey term for 'They eat together'

Mahqankahtimok (mah-gwan-gaht-dee-mog) - is the Wolastoqey term for the gift of maple sugaring time. Term gifted by Elder Imelda Perley.

Mijipjewei (noun) – Mi'kmaw term for food.

MINE YOUR BUSINESS

EXTRACT – FOSSIL FUEL – MINERAL – MINING – RECLAMATION – RESOURCE – REGULATION – RESIDUE – SUSTAINABILITY

Extract (verb) - to choose and take out for separate use.

Fossil fuel (noun) - a natural fuel such as coal or gas, formed in the geological past from the remains of living organisms..

Reclamation (verb) - Returning disturbed land to a usable state.

Residue (noun) - a substance or quantity that remains after a part has been removed or after a process has been completed.

WORD WALL

WASTE-FREE LUNCH

COMPOST – CONTAINER – MULTI-USE – PORTION – REDUCE – REUSE
SINGLE-USE – WASTE*FREE – NOSSUWEHLAL – TPAPEKHIKON

Reduce (verb) Finding ways to reduce the amount of waste that is generated is the first and most important step of the 5 R's

Nossuwehlal (neh-seh-wah-wal) - is the Wolastoqey term for waste (ie the child wasted the milk by pouring it out).

Tpapekhikon (to-pop-back-he-kon) - is the Wolastoqey term for a balancing scale.

TRASH TRACKER

ACCOUNTABLE – COMPOST – CONTAMINATE – GRAMS – JUSTICE – RECYCLE – REDUCE – REUSE – SORT – WASTE – GELEIWATL – NETUKULIMK

Accountable (adjective) being responsible for something or someone.

Contaminate (verb) - to make impure or unfit for use by adding something harmful or unpleasant.

Justice (noun) – a concept on ethics and law that means that people behave in a way that is fair, equal and balanced for everyone.

Geleiwatl (ge·ley·wa·dêl) – Mi'kmaw verb to protect or keep safe.

Netukulimk (Na-du-ga-lumpk) is a Mi'kmaw word used to describe the concept of using natural resources in a sustainable way.

COMMUNITY PARTNERS

Click for Local Connections

Professional Learning

Energy
EOS Eco-Energy

Climate
Learning for a Sustainable Future

School Gardens
The Ville Cooperative
Community Garden Best Practices Toolkit

Outdoor Learning
Great Minds Think Outside
Brilliant Labs Outdoor Makerspace

Project Grants

Place Aux Compétences
Rising Youth Canada
Environmental Trust Fund
Canada Post - Community Foundation
OurCanadaProject
Community Food Action Grant

Instructional materials

Climate
R4R - Learning for a Sustainable Future
Bike Walk Roll

Energy & Transportation
The Gaia Project
EOS Eco-Energy
NB Power
ESRI Storymaps
NB Virtual Museum Rocks Exhibit

Traditional Knowledge
Two-eyed Seeing

School Gardens
Whole Kids Foundation
Scotts Canada's Gro For Good program

Biodiversity
Nature NB
Birds Studies Canada
Homarus Eco-centre
Ducks Unlimited
Falls Brook Centre
Nature Trust NB

Local Outreach Programs

- NBEN Earth Education
- NB Museum
- NB Conservation Council
- Quartermain Earth Science Centre
- Stonehammer UNESCO Geopark
- Daly Point Nature Reserve
- Petitcodiac Riverkeeper
- Meduxnekeag River Association
- Mi'kmaq-Wolastoqey Centre
- Maliseet Nation Conservation Council
- Fort Folly Habitat Recovery
- Various NB Watershed Associations
- Recycle NB Regional Commission Programs

More than an Oyster

Grade/s: 4-6
Subject/s: Science, Social Studies, English Language Arts
Minimum Time Required: Multiple class blocks

Background

Learners are given the opportunity to explore question development and research about oysters. Learners lead open inquiry information gathering to understand the life, habits, environment and impacts of/on oysters in Nova Scotia.

Using Unama'ki Institute of Natural Resources book: "*The Oyster Garden: Kiju' Tells Her Story",* learners can identify relationships between the oyster and other organisms, scientifically considered non-living things and impacts using reading strategies.

Key Vocabulary and Concepts

- oyster
- habitats
- environment
- impacts
- living and non-living things
- relationships

Materials

- Oyster poster
- 5W's & 1H Anchor Chart
- *"The Oyster Garden: Kiju' Tells Her Story",* Unama'ki Institute of Natural Resources book available online as a free PDF: http://dev.uinr.ca/wp-content/uploads/2016/11/Oyster-kids-book-WEB.pdf
- Back to the Sea Society's *"Shell and Tell"* Oyster Video: https://www.youtube.com/watch?v=OF7M8kWLluUU

Facilitating the Learning Experience

Spark and Driving Question

What would grab learner's attention and interests?

- Educator gives a non-descriptive introduction to learning about oysters. Ie., Educators may use the oyster poster (below) that only includes the image and name of the organism.
- Learners write questions about oysters. Learners can use the 5W's & 1H Anchor Chart for support.

Idea and Plan Creation

Learners make their plan.

- Learners come up with a plan on how they may answer the questions they brainstormed
    - *'How can I find answers to our questions?'
- Learners create a plan to invite a guest, attend a field trip or research using multiple methods of text
    - *Learners can plan to research as individuals or small groups focusing on 1 particular area of questions
- Learners can write their questions on "I Wonder" strips (below)and post them on an open learning space or wall. Research can then be posted under the questions as they learn

Active Inquiry

Learners actively explore and participate.

- **Controlled Research:** Learners read *The Oyster Garden: Kiju' tells Her Story* as a class (we suggest using the digital copy on a projector). Learners can pause the class read aloud to underline, highlight or identify important information on the projected white board.

They may use the book to answer their questions and also make notes, sketches about the oyster, its habitats, and impacts on the oyster.

- **Other methods of research:**
    - Research using other print and digital texts about oysters
    - Invite a guest speaker

- Attend a field trip to an oyster farm

Understanding and Communication

Putting all the learning together.

- Learners can create research posters, illustrations, sketches, and diagrams to share their research. Learners can then combine their research to make an Oyster Garden Mural of Information

Sharing Knowledge and Future Application

Acting on it and extension opportunities.

- Learners invite other classes and community groups for a Oyster Garden walk. Learners can be Oyster Garden Tour Guides to share their research with others
- Learners may hold a knowledge building circle to ask new questions such as:
  - How may the oysters be affected in the future?

Extension:

- Learners participate in the *More than an Oyster Web* Learning Experience

At a Glance: More than an Oyster

Spark and Driving Question	Idea and Plan Creation	Active Inquiry	Understanding and Communication	Sharing Knowledge of Future Application
What would grab learners' attention/ interest?	**Learners make their plan**	**Learners actively participate and contribute to their own learning**	**Putting all the learning together**	**Acting on it and finding extension opportunities**
Educators can ignite curiosity by showcasing the oyster poster to learners without providing any explanation Learners write questions about Oysters using the 5W's & 1H Anchor Chart prior to learning about Oysters. Questions include basic knowledge of	Learners come up with a plan on how they may answer the questions they brainstormed Learners create a plan to invite a guest, attend a field trip or research using multiple methods of text Learners can plan to research as individuals or small groups focusing on	**Controlled Research:** Learners read The Oyster Garden: Kiju' tells Her Story as a class. They use the book to answer their questions and also make notes, sketches about the oyster, its habitats and impacts on the oyster. **Other methods of research:** Research using multiple methods of hard and digital texts	Learners combine their research to make an Oyster Garden Mural of Information	Learners invite other classes and community groups for an Oyster Garden walk Learners participate in the Oyster Web Learning Experience Learners can dive into learning how climate change is affecting oysters

the oyster, its habitat, food web and impacts	one particular area of question	Invite a Guest speaker Attend a field trip to an oyster farm		
Resources and Materials	**Resources and Materials**	**Resources and Materials**	**Resources and Materials**	**Resources and Materials**
Oyster Anchor Chart 5 W's & 1H Anchor Chart		UINR: "*The Oyster Garden: Kiju' Tells Her Story"* Video*: "Shell and Tell*"		Video: Facing Climate Change, Oyster Farmers: https://ocean.si.edu/ocean-life/invertebrates/facing-climate-change-oyster-farmers Oyster Web Learning Experience

Cross-Curriculum Outcomes

Provincial Curriculum: Nova Scotia Provincial Curriculum			
Grade	**Science**	**Social Studies**	**English Language Arts**
4	Learners will investigate a variety of local natural habitats. Learners will analyze interconnectiveness of and within local habitats, inclusive of a Mi'kmaw perspective. Learners will investigate how the Earth's surface changes over time	Learners will evaluate the impacts of exploration. Learners will investigate the relationships between humans and the physical environment. Learners will investigate the physical landscape of Canada.	Learners will communicate effectively and clearly respecting cultural contexts Learners will demonstrate a variety of ways to select and comprehend from a range of culturally diverse print and digital texts. Learners will select, interpret, and combine information from culturally diverse contexts. Learners will use writing and other representations to explore, clarify and reflect upon thoughts and experiences. Learners will create text, independently and collaboratively, using a variety of types of writing for a range of audiences and purposes. Learners will use a range of strategies within the writing process to enhance the clarity, precision, and effectiveness of their writing.
5	Learners will investigate how weather impacts daily life	Learners will investigate how we learn about the past, with a focus on Acadians, African Nova Scotians, Gaels, Mi'kmaq, and additional cultures.	Learners will communicate effectively and clearly respecting cultural contexts. Learners will demonstrate a variety of ways to select and comprehend from a range of culturally diverse print and digital texts.

		Learners will investigate the diverse societies of First Nations and Inuit, in what later became Canada.	Learners will select, interpret, and combine information in multicultural contexts. Learners will use writing and other representations to explore, clarify and reflect upon thoughts and experiences. Learners will create text, independently and collaboratively, using a variety of types of writing for a range of audiences and purposes.
6	Learners will analyse diversity of life in nature and significant relationships within the natural world.	Learners will investigate the role of culture in communities, inclusive of Acadians, African Nova Scotians, Gaels, Mi'kmaq, and additional groups. Learners will analyze how traditions and beliefs relate to culture in a region. Learners will compare sustainability practices between Canada and a selected country.	Learners will communicate effectively and clearly respecting cultural contexts. Learners will demonstrate a variety of ways to select and comprehend from a range of culturally diverse print and digital texts. Learners will select, interpret, and combine information in multicultural contexts Learners will use writing and other representations to explore, clarify and reflect upon thoughts and experiences. Learners will create text, independently and collaboratively, using a variety of types of writing for a range of audiences and purposes.

Atlantic Canada Curriculum Connections

New Brunswick:
https://www2.gnb.ca/content/gnb/en/departments/education/k12/content/anglophone_sector/curriculum_anglophone.html

Newfoundland & Labrador: https://www.gov.nl.ca/education/k12/curriculum/guides/

Prince Edward Island:

https://www.princeedwardisland.ca/en/information/education-and-lifelong-learning/programs-of-study

My Action Plan

Name: _____ Date: _____

Step	Action	Completed
1	Brainstorm and record questions about Oysters Think about - 5W's & 1 H - habitat - food web - impacts	
2	Create and follow a plan on how you will find answers to the questions	
3	As a class, read The Oyster Garden: Kiju' tells Her Story. Use reading and research strategies to find, highlight and record important facts and relationships about oysters	
4	Use facts, illustrations, and diagrams to create an Oyster Garden Mural	
5	Share research mural with others	

I Wonder Strips

I wonder…
I wonder…
I wonder…

https://deonoystercompany.com/

oysters

More Than an Oyster
5W's & 1H ANCHOR CHART

WHO? Who eats oysters?	**WHAT?** What is an oyster?	**WHEN?** When do oysters reproduce?
WHERE? Where do oysters live?	**WHY?** Why do oysters make pearls?	**HOW?** How do oysters help the environment?

More than an Oyster Web

Grade/s: 4-6
Subject/s: Science, Social Studies, English Language Arts
Minimum Time Required: 1+ hour

Preparing for the Learning Experience

Background

Learners use what they have learned from the *More than an Oyster Learning Experience* to apply to More than an Oyster Web Game. Learners are given a hands-on and interactive experience that shows the connections and relationships between living and western defined non-living things. Learners extend the experience by seeing how impacts can affect living and non-living things and those they are connected to. Learners will also consider indigenous views of living beings.

Key Vocabulary and Concepts

- oysters
- impacts
- affect
- organism
- living
- non-living
- relationship
- connection

Materials

- 1 length of rope
- Character name tags *1 per participant
- Moderator Cards
- Action Cards

Recommended Resources

- *Mn'tmu'k Mi'kmaq Ecological Knowledge: Eastern Oysters in Unama'ki*: https://www.uinr.ca/two-new-books-on-oysters-and-mikmaw-knowledge/
- *"The Oyster Garden Kiju' Tells Her Story"*: http://dev.uinr.ca/wp-content/uploads/2016/11/Oyster-kids-book-WEB.pdf

Facilitating the Learning Experience
Part 1

Spark and Driving Question

(What would grab learner's attention/ interests?)

- Learners will use their oyster research to form an oyster organism web from Learning Experience: More than an Oyster

Idea and Plan Creation

(Learners make their plan)

- Learners can choose living and 'non-living' things that they have learned are connected to the oyster and write them on their name tags
- Or educators can provide the premade living and non-living name tags from the name sheets below

Active Inquiry

(Learners actively explore and participate)

- Learners put on one name tag. One learner must be the oyster to start
- The oyster begins by holding the rope
- The moderator calls out a name or shuffles premade moderator cards and calls out a living or 'non-living' thing
    - I.e.., start with oyster and call out 'crab'
- Learners state how each organism is connected to another organism
    - I.e.., crabs eat oysters
- The 'oyster' holding the rope holds onto the end and passes it to the 'crab'
- Learners find all connections and will end up holding multiple pieces of rope that go in multiple directions

Understanding and Communication

(Putting all the learning together)

- Learners share their thoughts, opinions, facts they recall about the connects they see what surprised them, how they feel about their connections, the role of other living and 'non-living' beings
- Learners can consider how many indigenous cultures believe things in the environment like rocks or water are viewed as living beings

Sharing Knowledge and Future Application

(Acting on it and extension opportunities)

- Learners discuss, 'what ifs' and predict what would happen to different beings (living or 'non'-living) if they were impacted
- Use Part 2 to further explore impacts

Part 2

Spark and Driving Question

(What would grab learner's attention/ interests?)

- Learners participate in Part 1

Idea and Plan Creation

(Learners make their plan)

- Learners are told that an impact card will be called that may affect their connections
- Learners can brainstorm impacts that they think could affect the relationships
    - the educator can add these to the suggested cards as well

Active Inquiry

(Learners actively learn, explore and participate)

- When an impact is read to the group, any beings affected drop their strings
    - I.e.., disease/ bacteria- will impact oysters, crabs, birds
- Learners will see that one impact affects more than one connection

Understanding and Communication

(Putting all the learning together)

- Learners discuss what happened when beings are impacted

Sharing Knowledge and Future Application

(Acting on it and extension opportunities)

- Learners come up with new sparks and driving questions that may support extension opportunities

Modifications

- Read through the book and pick up the rope when your living or 'non-living' character is introduced in the story. Learners will have to decide when a living/ non-living thing or event negatively impacts the relationships i.e., dropping the rope.

Extension

- Learners can discuss 'solutions' to mitigate and adapt to impacts to help restore or support connections.

At a glance: More than an Oyster Web

Spark and Driving Question	Idea and Plan Creation	Active Inquiry	Understanding and Communication	Sharing Knowledge or Future Application
What would grab learners' attention/ interest?	**Learners make their plan**	**Learners actively participate and contribute to their own learning**	**Putting all the learning together**	**Acting on it and finding extension opportunities**
Part 1 Oyster Organism Web Learners will use their oyster research to form an oyster organism web	Learners each get one name tag of a living or non-living thing that is connected to an oyster	Learner's state and build connections between organisms using the yarn	Learners share their thoughts, opinions, facts they recall about the connects they see Record/ sketch the web of relationships created: teacher takes a picture and students record the relationships later	Learners discuss, 'what ifs' and predict what would happen to the organisms if they were impacted Use Part 2 to further explore impacts.
Part 2 Impacts on the Oyster Web	Learners are told that they will be given an impact card that may affect their connections	If learner's organism (on tag) is affected by an impact card, the learner drops the yarn	Learners discuss what happened when organisms were impacted	Learners come up with new driving questions that may support extension opportunities
Resources and Materials	**Resources and Materials**	**Resources and Materials**	**Resources and Materials**	**Resources and Materials**

More than an Oyster Learning Experience	Moderator Cards Action Cards Impact Carts	Organism Name Tags Yarn ball Moderator Cards Action Cards Impact Carts	Moderator Cards Action Cards Impact Carts	

Cross-Curriculum Outcomes

Provincial Curriculum: Nova Scotia Provincial Curriculum			
Grade	**Science**	**Social Studies**	**English Language Arts**
4	Learners will investigate a variety of local natural habitats. Learners will analyse interconnectiveness of and within local habitats, inclusive of a Mi'kmaw perspective. Learners will analyse rocks, minerals, and fossils in the local environment. Learners will investigate how the Earth's surface changes over time	Learners will investigate the relationships between humans and the physical environment. Learners will investigate the physical landscape of Canada.	Learners will communicate effectively and clearly respecting cultural contexts
5	Learners will investigate weather. Learners will investigate how weather impacts daily life Learners will test how physical and chemical changes affect the properties of matter.	N/A	Learners will communicate effectively and clearly respecting cultural contexts.
6	Learners will evaluate renewable and non-renewable sources of energy Learners will analyse diversity of life in nature and significant relationships within the natural world.	Learners will compare sustainability practices between Canada and a selected country. Learners will implement age-appropriate actions that demonstrate responsibility as global citizens.	Learners will communicate effectively and clearly respecting cultural contexts.

Atlantic Canada Curriculum Connections

New Brunswick:
https://www2.gnb.ca/content/gnb/en/departments/education/k12/content/anglophone_sector/curriculum_anglophone.html

Newfoundland & Labrador: https://www.gov.nl.ca/education/k12/curriculum/guides/

Prince Edward Island:

https://www.princeedwardisland.ca/en/information/education-and-lifelong-learning/programs-of-study

Printable Name Tag Cards

Cut and place one name card in each plastic name tag.

rock	oyster bed
cove	salt water
oyster	oyster larvae
oyster eggs	bacteria

crab	otters
sea bird	humans
soft mud	eel grass
reefs	birds

starfish	parasite
pearl	shoreline
plankton	algae
fungus	snails

pollution	sun
eating fish plankton	sand

Printable Moderator Cards

Moderator cards can be cut and shuffled.

Moderator will call out a card and learners discuss who is connected to that organism.

rock	oyster bed
cove	salt water

oyster	oyster larvae
oyster eggs	bacteria

crab	otters
sea bird	humans

soft mud	eel grass
reefs	birds

starfish	parasite
pearl	shoreline

plankton	algae
fungus	snails

sun	sand
pollution	plankton eating fish

Printable Impact Action Cards

Impact Action cards can be cut and shuffled.

Moderator will call out a card and learners discuss how and who that card affects.

harvesting too much	increase in bacteria
sewage treatment plants	heavy rains/ storms

water temperature	unsafe water
people living too close to the water	clearing of land

unregulated boats	erosion
climate change	disease

acidic water	water filtration
increase in predators	restoration projects

30 Minutes

WHY HANG OUT IN NATURE?

Conservation Corps Newfoundland and Labrador

OUR CONNECTION WITH NATURE

We all have a place, or many places, in nature that make us feel good. These places may help our mind feel more clear or calm, improve our mood, reduce our stress levels, boost our immune system, help us clarify our identity or help our body move in different ways (Robbins. 2020).

These are some of the many gifts of nature.

This activity helps students become more aware of the effect nature has on our emotions and creates a strong visual display that reminds both them and staff at school of the importance of nature in our lives. It also helps students practice and learn words related to nature and our feelings.

FAVOURITE PLACE

Ask students to draw themselves in their favorite place or participating in their favourite activity in nature. There is a list of ideas below to help inspire the class, if needed.

HOW YOUR FAVOURITE PLACE BENEFITS YOU

Ask students to describe the place or activity they've drawn and discuss why it's meaningful to them.

In their own words, have students write a short sentence about why they feel that this place or activity benefits their well-being.

YOUR FEELINGS

Ask students to choose three positive words to describe how they feel when they are in their chosen place. There is a list below to provide suggestions.

NATURE PLACES

Cabin, River, Pond, Beach, Mountain, Trail, Stream, Playground, Garden, Campground, Boat, Canoe. Woods, Camp fire, Hunting, Swimming, Riding, Hiking, Exploring, Quad bike, Skidoo, Forest, Farm.

EMOTIONS

Calm, Relaxed, Excited, Free, Energetic, Happy, Content, Safe, Brave, Thankful, Curious, Peaceful, Confident, Amazing, Silly, Sleepy, Blessed, Pleased. Wonderful, Playful, Joyous.

DISPLAY

Display the student work on a prominent wall where all students can see the connections between our emotions and our time in nature

Bibliography

Robbins, Jim. “Ecopsychology: How Immersion in Nature Benefits Your Health.” Yale E360, 9 Jan. 2020, e360.yale.edu/features/ecopsychology-how-immersion-in-nature-benefits-your-health#:~:text=These%20studies%20have%20shown%20that.

45 Minutes

HEAT SEEKER TAG

Conservation Corps Newfoundland and Labrador

1. Area Set-Up

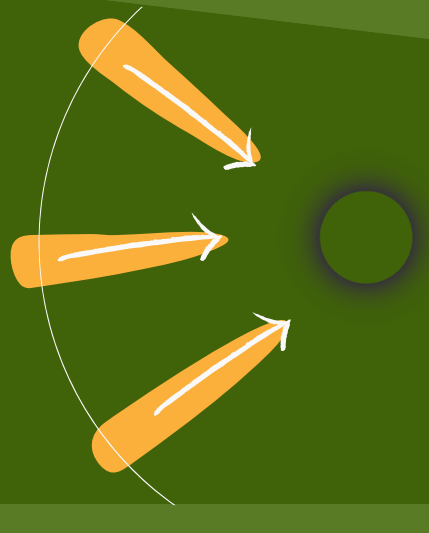
Create two circles: A small Earth (2m diameter), and large atmosphere (20m diameter).

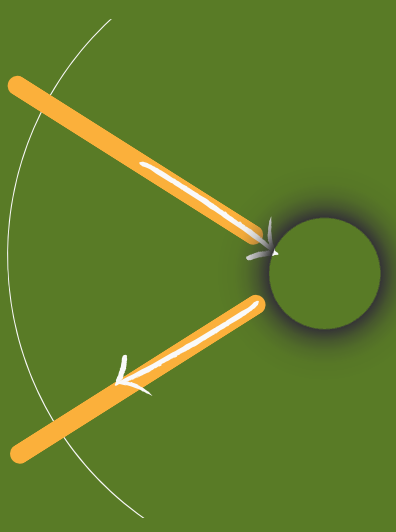
2. Student Set-Up

Identify 4 students as 'heat seeking' taggers. Give them a wearable blue identifier (pinny/vest/ coloured band). These students start between the earth and the atmosphere. The rest of the students will be 'rays of the sun'. These students start outside the atmosphere circle .

3. How to play

The 'rays of the sun' try to get to earth, and reflect back out to the outside of the atmosphere without being tagged. 'Heat seekers' try to tag. If a sun ray gets tagged, they sit down and are trapped!





4. Game Rules

'Heat seeker' taggers can only walk AND can only tag sun rays LEAVING the earth. Sun rays can enter the atmosphere anywhere, and can run, but once they have entered they can only run in a straight line. They must put one foot inside the earth, then 'reflect' off the Earth on the same side they came in, and in a straight line. They can not wait at "Earth."

5. Progressions

Once the students understand the game, time how long it takes for all sun rays to be tagged. Then add 2 - 4 extra "heat seekers.". Re-time the game, noting the changes. Repeat 3 - 4 times.

6. Game Analogy

The more 'heat seekers," the more sun rays (solar energy and heat) are trapped in the atmosphere. The 'heat seekers' represent gases. The tagged sun rays are trapped heat, warming the earth: the "Greenhouse Effect" in action!

7. Differentiations

Make the atmosphere smaller, and have the heat seeker taggers only take two steps in any direction before they must stop.

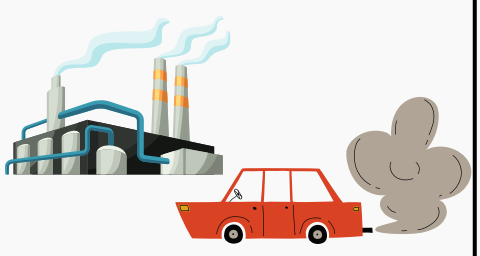
Make the atmosphere circle and earth circle larger, and allow the heat seekers to run.

Prior to the game, discuss activities that humans are doing that affect CO2 levels in the atmosphere. Put these into a box or bag called 'human activity'. Before adding extra "heat seekers," pull out a 'card' from the box or bag, and use this action to justify the inclusion of more heat seeker taggers (CO2). The following activity can be used as inspiration for this action:

Climate Problems and Solutions

Name: _____

Look at each of the images. What could be the problem for our planet? What solution can you think of to address this problem?

Problem	How could this affect our planet?	Solutions
		
		
		
		
		
		

climatechange education centre

Conservation Corps Newfoundland and Labrador

YouCAN! Youth Climate Action Now | TuPEUX! Action jeunesse pour le climat

Lesson Plan Guide: Fast Fashion:

Grades P-3

Climate Science Workshop: Fast Fashion, K-3

Lesson Title: Fast Fashion

Provided by: STEAM PEI

Grade Level: P-3

Subjects Covered: Sciences, Language Arts

Time required for entire activity/lesson: 1.5 hours

Key Environmental Terms: Recycle, Reduce Fossil Fuels, Greenhouse Effect, Dispose, Climate Change

Activity/Background Summary: STEAM PEI's Fast Fashion Climate Science Activity aims to give students an understanding of the impact that 'fast fashion' (mass production of cheap, on-trend, clothing) has on our environment and the climate. Students will discuss ways in which they can help with the fast fashion problem, and will have an opportunity to design and upcycle a piece of old clothing. Materials will be provided by STEAM PEI. For ages 7 and under focus more specifically on what upcycling is, why it's a good thing to do for the environment (similarly to the 3 R's) and then head into the creative activity of designing something small and stuffed, or painting on an old t-shirt.

Prep: 5-30 Minutes:

- Make sure Fast Fashion Kits are stocked.
- Ask Educators to have kids prepare by bringing in an old piece of clothing they no longer use on the day of the workshop. Also have them bring their notebooks and pencils for design sketches

Materials:

- Pieces of cloth
- Fashion accessories/embellishments (yarn,velcro, zippers, studs, beads, etc)
- Natural Clothing Dyes (optional)
- Glue Gun
- Scissors
- Googly Eyes
- Pompoms
- Plastic Jewels
- Hot Glue
- Glue in a bottle
- Buttons
- Fabric Paint

Resources:

- Let's Talk Science Clothing 4 Climate (great resources for Fast Fashion Activities geared towards older students)
- Fast Fashion Video 1
- Fast Fashion Video 2
- The Life Cycle of a T-Shirt Video
- Denim Upcycling Ideas

Safety Considerations:

- Scissors and needles should be used under supervision.
- Younger kids should be using children's scissors and should not be using needles in this activity.

Educator Checklist:

Depth of Inquiry:

- Guided: educator choose topics and questions and learners design a product or solution.

Reflection

- Have I accommodated the diverse learners in my classroom? How?
- Have I considered culturally relevant pedagogy? How?
- Do I have a range of sizes of clothing/fabrics?
- Have I considered culturally relevant pedagogy? How?
- Am I considering that some learners might be from countries that are the origins of most clothing?
- Are there opportunities to collaborate with our community?
- Where are the opportunities for assessment?
- What tactics can I use for kids that are struggling with the activity?
- How can I make everyone feel included?
- Did I think of multiple ways so that students feel like they understood the lesson?
- Are there barriers or limitations to this lesson?

Skills Continuum

What skills will be implemented in the learning experience:

- Creativity and/or imagination
- Estimating
- Sustainability
- Exploration of variables in a controlled environment
- Problem Solve
- Question
- Evaluate
- Designing
- Sketching
- Use different types of materials to solve a problem

Details

Curriculum Outcomes (Prince Edward Island):

Kindergarten: Early Numeracy: 4.2 build and describe 3-D objects p.106

Social Studies: 1.2 begin to develop an awareness of needs and wants that are common to all children p.114

Health and Physical Development: 1.2 develop control of small muscles p. 138
3.2 demonstrate curiosity and interest in learning p.148

Creative Development: 1.2 express ideas and feelings creatively through artistic expression p.158

Grade One: General Curriculum Outcome 1: Science, technology, society, and the environment (STSE)—Students will develop an understanding of the nature of science and technology, of the relationships between science and technology, and of the social and environmental contexts of science and technology. P.9

LS – 2 Classify the characteristics and needs of living things p.27

Grade Two: 203-3 communicate procedures and results, using drawings, demonstrations, and written and oral descriptions p.20
201-3 use appropriate tools for manipulating and observing materials and in building simple models p.34
203-1 communicate questions, ideas, and intentions while conducting their explorations p.34

Grade Three: 201-2 manipulate materials purposefully p.61
Identify materials that could be used to solve the problem posed, and suggest a plan for how they will be used (200-5) p.61

REFERENCES:

1. Kindergarten Prince Edward Island Integrated Curricula: https://www.princeedwardisland.ca/sites/default/files/publications/eelc_kindergarten.pdf
2. Grade One Prince Edward Island Science Curriculum: https://www.princeedwardisland.ca/sites/default/files/publications/eelc_science_1.pdf

3. Grade Two Prince Edward Island Science Curriculum: https://www.princeedwardisland.ca/sites/default/files/publications/eelc_science_2.pdf
4. Grade Three Prince Edward Island Science Curriculum: https://www.princeedwardisland.ca/sites/default/files/publications/eelc_science_3.pdf

Overview

Activity Plan:

Introduction	3 minutes: Introduce STEAM PEI and what we do, Introduce ourselves. Ask: Is clothing wasteful? What is waste and why do we produce it?
Details	5 minutes: Show the Fast Fashion Video
Pre Activity Discussion	10 minutes: Have a short discussion about the impact of fast fashion on the environment. Some guiding questions: ● What do you think is involved in the life cycle of a single piece of clothing? ● Why do we use old materials for crafts? ● Where did the clothes you are wearing right now come from? Can you check the tags? ● Are clothes wasteful? ● How can we reuse materials? ● What are the 3 R's?
	40 to 60 minutes: Mention the importance of being careful and keeping themselves and others safe while using some of the equipment (e.g. scissors). You can use a PowerPoint Presentation with images of crafts to make out of old clothing/fabric or to make a graphic t-shirt by painting on their clothing with fabric paint. There are 4 steps to the process: 1) Draw their Design 2) Get Feedback and Input from Facilitators 3) Create their Design 4) Get input from Facilitators and make changes if needed
Sharing and Post	15 minutes : Have the kids show off and share their designs if

Activity Discussion	they want to. If they are wearable designs they can also do a Fashion Show! Some guiding questions: How did you feel about the activity and the upcycling process? Do you have any ideas for future upcycling activities you can do at home? Thank the students for their ideas and creative designs.
KPI Survey	● Ask participants the 2 KPI Questions on Survey Form and Record. ● Record the total number of students that participated in the activity.

Lesson Plan Guide: Power of the Wind: Windsocks, Grades P-3

Power of the Wind: Windsocks, P-3

Lesson Title: Power of the Wind: Windsocks

Provided by: STEAM PEI

Grade Level: K-3

Subjects Covered: Sciences, Language Arts

Time required for entire activity/lesson: 1 hour

Key Environmental Terms: Wind, energy, turbine, climate change, fossil fuels

Activity Summary: Through these detailed descriptions based on age, the aim of the lesson is to teach them what wind is, and how wind energy helps the earth with its energy output, by avoiding using GHG's, as wind energy is a renewable resource. Wind Socks will help us start the activity and conversation of how wind works.

Background Information: Wind carries a lot of energy. Energy that has the power to make wind chimes sing, windsocks flap, waves to surf, windmills to mill grains. We are learning about what wind is, and the potential of this type of energy. Additionally how it helps the climate by using wind energy.

Preparing for the Learning Experience:

Prep: 15 Minutes

- Cut enough yarn for day
- Cut x3 streamers per kid
- Print out notes about wind for younger/mid kids/older kids

Materials: (Things participants work with, please also link/list where you would source each material)

- Paper–Staples
- Streamers– Dollar Store (cut into 5 inch strips) x3 strips per kid
- Markers or Pencil Crayons–STEAM
- Pencil Crayons–STEAMx1 per group
- The three little pigs book–Indigo
- String–Dollar Store (10 inches) x1 per kid
- Stickers

Resources: (Extras like books, video links, things that provide information/context)

- Slides

- The three little pigs

Safety Considerations: Consider not using markers, or asking the classroom teacher beforehand if they are okay with markers.

Educator Checklist:

Depth of Inquiry:

Structured: learners follow the lead of the educator as the whole class works

through the inquiry process

Reflection

- Have I accommodated the diverse learners in my classroom? How?
- Have I considered culturally relevant pedagogy? How?
- Do I have a range of sizes of clothing/fabrics?
- Have I considered culturally relevant pedagogy? How?
- Am I using knowledge outside of the PEI context?
- Are there opportunities to relate this project to other weather technologies?
- Where are the opportunities for assessment?
- What tactics can I use for kids that are struggling with the activity?
- How can I make everyone feel included?
- Did I think of multiple ways so that students feel like they understood the lesson?
- Are there barriers or limitations to this lesson?

Skills Continuum

What skills will be implemented in the learning experience:

- Creativity and/or imagination
- Fine motor skills
- Exploration of variables in a controlled environment
- Measuring
- Question
- Evaluate
- Design

Details

Curriculum Outcomes (Prince Edward Island):

Kindergarten: : Early Literacy: 1.4 follow and give directions in different contexts p.58

1.7 engage in simple oral presentations and respond to oral presentations p.58

1.4 Observe children's ability to finish tasks when more than one instruction is given. Do you have to give them the same instructions many times to finish what has been asked? P

Early Numeracy: 4.2 build and describe 3-D objects p.106

Grade One: General Curriculum Outcome 1: Science, technology, society, and the environment (STSE)—Students will develop an understanding of the nature of science and technology, of the relationships between science and technology, and of the social and environmental contexts of science and technology. P.9

General Curriculum Outcome 2: Skills and processes—Students will develop the skills required for scientific and technological inquiry, for solving problems, for communicating scientific ideas and results, for working collaboratively, and for making informed decisions. P.9

LS – 1 Distinguish between characteristics that make plants and animals unique p.27

LS – 2 Classify the characteristics and needs of living things p.27

Grade Two:
102-10 demonstrate how air, as a substance that surrounds us, takes up space and is felt as wind when it moves p.34

201-3 use appropriate tools for manipulating and observing materials and in building simple models p.34

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Use appropriate tools in constructing a device to measure the speed and direction wind (201-3) p.35

Communicate questions and ideas about air while conducting explorations (203-1) p. 35

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Activity Plan: Wind Sock

Approximate Time: 60 Minutes	**Details:**
Introduction	Today we will be learning about wind! What is wind? How does it feel on days when it's really windy? Do you think wind has energy? SURPRISE IT DOES! Will talk about that energy and its potential. We will either be making a windsock (grades K-3) or a puff mobile for grades 4-6, directions below
Detailed Timing	(Include a breakdown of the time required for each part of the session here) 15-20Minutes: Introduction Conversation/Presentation 1 Minutes: Create Wind Sock 10 Minutes: See how they work outside/with a fan 10 Minutes: Wrap up conversation. 5 Minutes: Clean Up
Activity	(The detailed plan for the activity should be written here. Any extra pages you will need for the activity such as step-by-step instructions, etc. can be linked in the resources section or added on the following page below this template) ☐ **Create Windsock:** ☐ On an piece of paper, draw and color the base

	of the windsock, 3 stickers max can be added. ☐ Cut out what color and size you want for the streamers (5 inches) ☐ Secure streamers to the bottom part of the windsock with tape ☐ Wrap the paper in a cylinder and secure with tape so the shape remains ☐ With a 6-8 inch piece of yarn, tape one end to the inside of the cylinder, and tape the other end of the yarn and tape to the opposite side inside the cylinder. ☐ Hang in a tree and measure how strong the wind is and what direction it comes from.
Clean-up	Get students to put their leftover pieces in the garbage that might be left on the floor from the activity.

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Clean-up	Get students to put their leftover pieces in the garbage that might be left on the floor from the activity.

7-9

Climate Education Resources

EXPLORING GREEN JOBS IN NEW BRUNSWICK

LEARNING PACKAGE

DEFINING GREEN JOBS

- What is a Green Job?
- Green Job Jumbler
- How Green is Your Job?

GREEN JOBS IN NEW BRUNSWICK

- Exploring Types of Jobs
- Green Experts Directory Exploration
- Green Experts Panel Playlist

SKILLS AND INTERESTS

- Skills, Competencies and Training
- Take a Quiz!

WRAP UP

- How to Keep Exploring
- Reflecting on Green Jobs

Land Acknowledgment

This document was produced on the unceded and unsurrendered territories of the Wolastoqiyik, Mi'kmaq and Peskotomuhkati peoples of the Wabanaki Confederacy. The Gaia Project will do our best to support the sharing of Indigenous knowledge and culture in our work. We will collaborate with community knowledge keepers, humbly listen and learn about how we can honour the Peace and Friendship Treaties.

About the Learning Package

The Exploring Green Jobs in New Brunswick learning package is designed to help grade 6-12 students learn more about green jobs in our province. The package contains a wide range of information and related activities, which fall under the following topics:

Defining Green Jobs
Green Jobs in New Brunswick
Skills and Interests
Wrap Up

While these topics can be explored in any particular order, the last one (Wrap Up) is meant as a summary exercise. Students can complete any or all of the proposed activities individually, in groups, or in a class-wide discussion.

Interested in going further with your students?

The Gaia Project has a network of industry professionals who are passionate about their green jobs and who are available to:

- Give presentations
- Consult and provide guidance on climate action projects
- Offer mentorship opportunities

The Green Experts Program was created to showcase existing green careers in the province to help inspire youth in joining New Brunswick's clean growth economy.

Visit our website to request a presentation on these exciting careers in your classroom!

What is a Green Job?

Traditionally, green jobs have been defined as jobs that have a direct and positive impacts on the planet such as jobs related to renewable energy, electric transportation, energy efficiency or nature conservation. However, in the last few years, this definition has broadened significantly, as the economy transitions, every job has the potential to be a green job.

The United Nation's International Labour Organization (ILO) defines green jobs as "jobs that contribute to preserving or restoring the environment by incorporating one or more of the following aspects:

- improving energy and raw materials efficiency;
- limiting greenhouse gas emissions;
- minimizing waste and pollution;
- protecting and restoring ecosystems;
- and supporting adaptation to the effects of climate change".

Improving energy and raw materials efficiency

In the fight against climate change, climate-friendly practices that would improve energy and raw materials efficiency are very important. While there has been a transition towards renewable energy in the last few decades, non-renewable energy is still the norm in most places. Not only are these non-renewable energy sources running out, but they are also bad for the environment due to how they are extracted or used. This is why it is so important to improve energy and raw materials efficiency.

Examples of jobs (found on GREEN EXPERT - Energy) :

- Manager of Global Resource Efficiency at McCain Foods - manages goals and commitments for reducing water usage, CO2 emissions, food waste and switching over to renewable energy.
- Energy Analyst at City of Fredericton - ensures that all buildings in the City of Fredericton's portfolio have fully functional heating, ventilation, and air conditioning (HVAC) systems, that they work at their peak efficiency, and that they only operate when required to use the least amount of energy as possible.
- Education and Outreach Coordinator at Net Zero Atlantic - creates educational material and provides training and support to stakeholders within a research organization that focuses on creating a sustainable energy sector by leading applied research in critical topics.

Limiting greenhouse gas emissions

This is arguably the most crucial aspect in the fight against climate change. Limiting and reducing greenhouse gas emissions is extremely important and can be done on many different levels and in various ways. While many actions can be taken on a personal level to reduce your own greenhouse gas emissions, it is important that companies and businesses also put in the effort to reduce their carbon footprint.

Examples of jobs (found on GREEN EXPERT-Sustainability) :

- Communications and Sustainability Specialist at the Port Saint John - aims to better plan and implement sustainability initiatives covering many topics such as creating a decarbonization plan and an energy transition plan.
- Senior Consultant at Sustainability Solutions Group - focuses on helping clients identify pathways to decrease energy use and greenhouse gas emissions in their community, and adapt to the impacts of climate change.
- Climate change officer at the University of New Brunswick - researches and plans programs and policies to help the university address climate change.

Minimizing waste and pollution

There is a subtle difference between waste and pollution. Waste is unwanted or unusable materials, some being biodegradable and others not, while pollution refers specifically to wastes that are harmful to the environment. Find out more here.

Non-biodegradable and hazardous waste can be found in our oceans, soils, fresh water and landfills which in turn have negative effects on our climate, human health, wildlife, and ecosystems. Humans have been producing too much waste; but luckily, more and more people are taking the initiative to minimize and better manage waste and pollution.

Examples of jobs:

- Communications Coordinator at Encorp Atlantic – manages the website and social media accounts for a leading organization in recycling and industry stewardship. (GREEN EXPERT - Waste)
- Director for Southeast Eco360 – with the help of their staff, works hard to educate citizens on proper waste sorting and management, all while being key members of New Brunswick's sustainable waste management effort.
- Air Quality Monitor for the Province of New Brunswick – monitors air quality in the province to minimize air pollution and protect environmental and human health.

Protecting and restoring ecosystems

An ecosystem is a biological community of interacting organisms (plants, animals, micro-organisms, etc.) and their physical environment.

Climate change, excessive waste, poor waste management, deforestation, urban development, and the use of pesticides, for example, can all have negative effects on wildlife and ecosystems. It is very important for us to take the necessary steps to protect and restore our ecosystems and biodiversity. Learn more about ecosystems here.

Examples of jobs:

- Director of Conservation at Nature NB - creates plans and implements actions that benefit wildlife, species at-risk, and a variety of habitats with the help of a team of staff and volunteers.
- Communications Officer with the Conservation Council of New Brunswick – manages websites and social media accounts, and writes content for an organization that promotes environmental stewardship.
- Project Leader with the Petitcodiac Watershed Alliance – leads a particular project for a non-profit organization that works to protect the Petitcodiac and Memramcook Rivers and their tributaries.

Supporting adaptation to the effects of climate change

Mitigation and adaptation are two separate things that can go hand in hand when it comes to climate change. In fact, climate change mitigation means trying to avoid and reduce emissions to lessen the effects of climate change, whereas climate change adaptation means changing our behaviours, systems, and ways of life, in order to adapt to the changing climate. However, if we keep mitigating these effects, it will be easier for us to adapt to the unavoidable changes. (Find out more here)

Climate change adaptation can vary from one place to another, so it is important to understand the local risks before planning adaptation solutions and strategies. These strategies can include planting crops that can tolerate warmer weather, building infrastructure that can withstand extreme weather conditions such as flooding and high winds, as well as managing our natural resources wisely and sustainably. We can all do our part in trying to reduce the impacts of climate change, as well as adapt to the changing effects.

Examples of jobs:

- Environmental Strategist for the City of Fredericton - oversees the implementation of the actions in the Climate Plans to reach environmental targets (GREEN EXPERT - Sustainability)
- Policymaker with your local or provincial government – works hard on creating plans and policies regarding the environment, including mitigation and adaptation. Take a look at New Brunswick's Climate Change Action Plan here.
- Project Manager at Fundy Solar Ltd. – designs and installs solar power systems.

Green Job Jumbler

According to the UN's International Labour Organization, green jobs help the environment through one or more of the following strategies. Match the jobs listed below to the strategy that best fits their area of work.

Energy Auditor	Environmental Lawyer	Architect
Electric Vehicle Technician	Public Transportation Planner	Policy Advisor
Environmental Scientist	City Planner	Urban Farmer
Construction Manager	Solar Installer	Sustainability Consultant
Climate Change Officer	Environmental Engineer	Recycling Worker
Renewable Energy Engineer	Biologist	Chemical Engineer
Tourism Director	Wind Turbine Technician	Public Engagement Officer
Hydrologist	Land Trust Manager	Conservation Coordinator

Improving energy and raw material efficiency	**Limiting greenhouse gas emissions**	**Minimizing waste and pollution**	**Protecting and restoring ecosystems**	**Supporting climate change adaptation**

Green Job Jumbler Reflection

1. Could one or more of these jobs have been placed under multiple strategies? Provide an example and explain under which other strategy (or strategies) it could have fallen.

2. In your opinion, should green jobs focus on a single strategy or should they try to cover as many strategies as possible? Explain.

3. If you had to choose one of these jobs as your future career, which one would you pick? What aspects of that particular job appeal to you? Explain.

How Green is Your Job?

As the economy transitions, a lot more jobs have the potential to be "green jobs". At The Gaia Project, a green career is any job or self-employment venture that genuinely contributes to a more sustainable world.

Do any of your family or friends have a green job? Could their jobs be greener than you think? Interview someone you know to learn more about their job!

Interview Questions:

1. What is your work title and what are your main responsibilities?

_____

_____

_____

_____

2. What about your job is linked to sustainability?

_____

_____

_____

_____

3. Do you think your job could be greener? If yes, how? If no, why not?

_____

_____

_____

_____

Interview Reflection

1. Do you think you would enjoy working in your interviewee's position? What aspects of their main responsibilities do you like? Dislike? Explain.

2. In your opinion, is your interviewee's job a 'green job'? Under what strategy or strategies would their job fall? Explain.

3. Think of ways to make your interviewee's job greener. Don't be afraid to think outside the box: could their means of commuting or travel, the products they use or buy, or their energy consumption be more environmentally friendly? If your interviewee's job is already green, think of ways to make another job greener.

Reminder: According to the UN's International Labour Organization, green jobs help the environment through one or more of the following strategies: improving energy and raw materials efficiency, limiting greenhouse gas emissions, minimizing waste and pollution, protecting and restoring ecosystems, and supporting climate change adaptations.

Exploring Types of Jobs

Green jobs are essential for future-proofing the planet. There is still a long way to go if we are to reverse the environmental damage that has been done and tackle the impending climate crisis, but there is also enormous potential in the job market to help make those necessary changes to the way we live and grow as a society.

While green jobs can be found in almost any industry in New Brunswick, the term is relatively new and roles that are described as 'green' are only just beginning to emerge on the job market. To help students get a taste of New Brunswick's growing green economy, we have compiled recent job advertisements in this document, organized by personality characteristics, hobbies, and likes.

"The Helper"

For people who value supporting other people

You have these characteristics, hobbies, and likes:

- You enjoy working in teams
- You are patient and good at listening to people's concerns
- You are curious about why people behave the way they do
- You like understanding how human health and environmental issues are connected
- You like reading, writing, speaking or making art to share stories or messages
- You like working with different groups; children, seniors, people with special needs, etc.
- You might feel passionate about working with animals.
- History, social studies and political science might be courses that interest you

Take a look at a sample of New Brunswick job advertisements to learn more:

- Respiratory Therapist – Vitalite, Lameque
- Emergency Management Coordinator - Red Cross, Moncton
- Regional Director of Population Health – Horizon Health, location negotiable
- Capital and Housing Director – Natoageneg First Nation, Eel Ground
- Climate Change Coordinator– EOS Eco-Energy, Sackville

Other kinds of jobs for helpers:

- Behavioral Researcher
- Teacher or professor
- Workshop-based Public Educator
- Public Policy Analyst
- Consultation Specialist on Indigenous Rights
- Executive Director at a non-profit
- Community Projects Coordinator

"The Outdoor Enthusiast"

For people who feel best when they are in nature

You have these characteristics, hobbies, and likes:

- Your ideal vacation is hiking, camping, climbing, fishing, skiing, paddling etc.
- You go to nature when you are stressed and need to re-focus
- You enjoy physical activity
- You take comfort in understanding ecology and how nature works
- You are very safety conscious
- You feel comfortable being in remote places
- You are interested in learning how to use tools and equipment (maybe technical sports and camping gear and some of your favorite things to buy)
- Biology, geography and ecology might be courses of interest for you

Take a look at a sample of New Brunswick job advertisements to learn more:

- Intermediate Environmental Scientist – Wood Plc, Fredericton
- Conservation Manager - The Nature Trust of New Brunswick
- Forest School Educator – Cedar Brook Early Learning Centre, Fredericton
- Project Manager - Fundy Biosphere Region
- Harvest Treatment Supervisor (Forestry) – ACFOR, Cocagne offices (with out of province travel required)

Other kinds of jobs for outdoor enthusiasts:

- Restoration Coordinator/Specialist
- Lab Technician
- Environmental Impact Assessment Technician
- Wetland Delineation Specialist
- Regenerative farmer (all types, animals, produce, orchards)
- Forester/ Forest Technician
- Ecologist
- Biologist
- Environmental Researcher
- Eco-tourism Operator
- Tour Guide
- Invasive species expert

"The Analyst"

For people who like data and solving technical problems

You have these characteristics, hobbies, and likes:

- You likely have some experience coding or building 3D models
- Maybe your favourite games are world-building ones, like Minecraft or Settlers of Catan
- You like to really understand a problem before you try to solve it
- You might like understanding all of the parts of complicated systems, like capturing and storing drinking water, getting it into homes and then treating it and releasing it back into the watershed
- You might take time to carefully research the specs. on an item before you buy it
- Taking apart something to see how it works might not be enough for you, you may need to understand the physics or chemistry behind why it works
- Physics, automotive, computer science and math might be courses of interest to you

Take a look at a sample of New Brunswick job advertisements to learn more:

- Buildings Mechanical Engineer – CBCL Ltd., Saint John
- Forestry Management Software Solutions Analyst – Remsoft software, Fredericton
- Aquatic Research Technician – Huntsman Marine Science Centre, St. Andrews
- Water Resources Specialist – Environment and Climate Change Canada, Fredericton
- Climate Change Science and Adaptation Specialist – CLIMAtlantic, remote from anywhere in Atlantic Canada

Other kinds of jobs for analysts:

- Environmental Technologist/Scientist
- Bioremediation Technologist
- Urban Planner
- Energy Advisor
- Home Energy Auditor
- Chemist
- Meteorologist
- Hydrologist
- Environmental Consultant
- GIS Analyst

"The Creative"

For people who like to design, tell stories, and solve problems in unconventional ways

You have these characteristics, hobbies, and likes:

- You might be someone who thinks best with a pen and paper – writing, drawing, making origami and models
- In a group problem-solving session, your solution might look very different from others
- You might have friends with different hobbies and interests than you do
- You might have come up with ways to make really boring jobs fun
- You would be very excited to re-decorate your bedroom or create a blueprint for your dream home
- You probably like complex, action-related projects like figuring out how to reduce food waste at your school or getting students involved in active transportation
- Art, English, Social Studies, Independent Studies and Woodshop might be courses of interest to you

Take a look at a sample of New Brunswick job advertisements to learn more:

- Executive Director – Really Local Harvest – Greater Moncton area
- Bilingual Content and Social Media Manager – ALUS – Anywhere in N.B remote
- Climate Change Officer – UNB, Fredericton
- Urban Planner – Fundy ARK Development, Saint John
- Marketing Specialist - Clean Energy Associates - Anywhere in Canada remote

Other kinds of jobs for creatives:

- Architect
- Urban and Rural Planner
- Communication Specialist
- Graphic designer
- Videographer
- Lifecycle Analyst
- Waste Diversion Manager
- Executive Director (non-profit)

"Hands-on"

For people who like to combine problem solving with physical work

You have these characteristics, hobbies, and likes:

- You always want to take things apart to see how they work on the inside
- You would rather design and fabricate something than buy it
- You do a lot of repair jobs yourself, fixing your bike, car, doing DIY projects
- You don't mind working outside and moving around all day
- You probably have a good idea about how homes and buildings operate
- You would be excited to take on a challenge like building an off-grid, tiny house
- Automotive, Woodshop, Physics and Math might be courses of interest to you

Take a look at a sample of New Brunswick job advertisements to learn more:

- Energy Advisor -Homesol (Saint John)
- Solar Installer – KV Energy Solutions (Rothesay)
- Wind Turbine Technician – EPiK Energy and Renewables (Albert County)
- EV Mechanic (Red Seal Technician) – Steele Auto Group (Volkswagen Moncton)
- HVAC Mechanic – Degree Commercial Inc. (Woodstock)

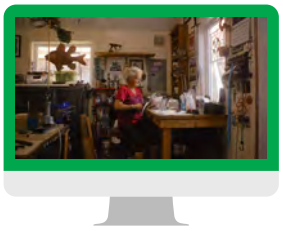
Other kinds of jobs for hands-on people:

- Solar, wind or geothermal installer
- Landfill Operator
- Heavy Machinery Operator
- Contractor
- Electrician
- Mechanic
- Carpenter

Don't see yourself in just one of these categories? Don't worry, some people have a lot of interests and like to work on diverse tasks. A few generations ago, people worked full-time at one or two jobs for most of their life. Things are different now and you will get to have as many experiences in your work-life as you like.

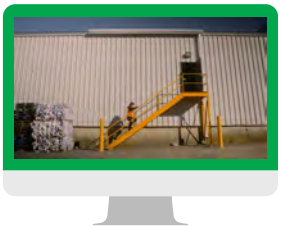
You might be an entrepreneur, you might work a few part-time jobs, or find you are satisfied doing volunteer work that aligns with your interests. Some people even do different kinds of work at different times of the year, for example, you could run whale watching tours and marine education seminars spring to fall and spend your winter writing, working in retail or doing fundraising for an environmental non-profit.

Green Experts Video Playlist



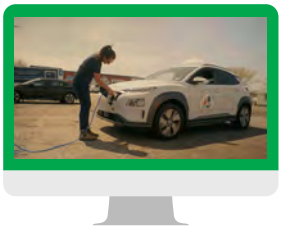
Alanna Baird – The Artist

Alanna Baird of St. Andrews, New Brunswick, discusses how art can be a form of professional environmental engagement. Through her pieces, Alanna has become a staple in her community, repurposing tin cans and other metals to create mystical, oceanic sculptures



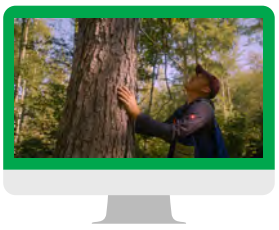
Barb Sharp – The Recycler

Barb Sharp is the Waste Diversion Manager at the Western Valley Regional Service Commission in Centreville, New Brunswick. Through her work, she helps ensure people living in the region are taught how to properly recycle and reduce their waste, and make sure the process runs smoothly at the local waste sorting facilities.



Courtney Piercy – The Biologist & Zaria Sorel – The Sustainability Manager

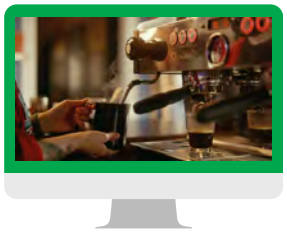
Courtney Piercy is a Project Biologist, and Zaria Sorel is the Sustainability Manager at Eastern Charlotte Waterways in Blacks Harbour New Brunswick. Courtney explains how marine protection in the Bay of Fundy is important to the local economy, culture and environment. Zaria's commentary, however, is focused on another area of concern for ECW: the innovative electric vehicle car-share program, and the new indoor farm in Blacks Harbour!



Shawn McGrath – The Forest Technician

Shawn McGrath is a Forest Technician at ACFOR in Cocagne, New Brunswick. Shawn spotlights the importance of restorative forestry practices, and the diversity of opportunities that come with working in healthy forests. The work Shawn does at ACFOR showcases that industry and conservation can work together in the forestry industry and that a lot can be done to reduce GHG emissions associated with forestry.

Luc Doucette and Marie-Paule Deveau – The Social Entrepreneurs



Luc Doucette and Marie-Paule Deveau are the co-owners of ForêStation Café in Rogersville, New Brunswick. Together, they highlight the value of opening a café in their community that eventually morphed into a social enterprise that contains a bulk grocery store. Luc and Marie-Paule know first-hand that sustainability can build a brand!

Brian McCain – The Director & Ansie Van Wijk – The Engineer

Brian McCain is the Global Director for Environment & Resource-Efficient Operations and Ansie Van Wijk is Manager for Global Resource-Efficient operations at McCain Foods in Florenceville, New Brunswick. Together, they discuss how their work focuses on making the systems and processes involved in manufacturing as efficient as possible by reducing water, energy, and material waste.

Will McGivney – The Engineer

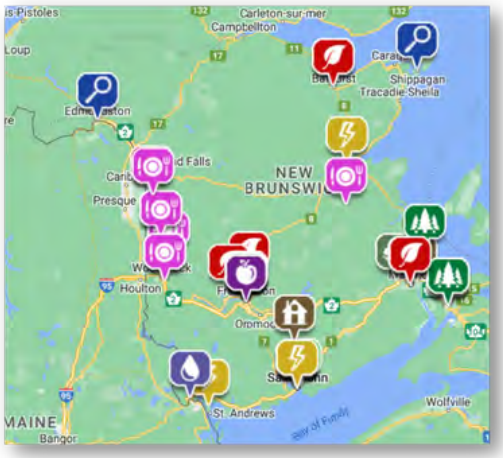
Will McGivney is a Project Engineer at Saint John Energy in Saint John, New Brunswick. Will discusses the environmental and financial importance of renewable energy in the future of energy here in New Brunswick. The energy sector is rapidly changing with new and innovative technology, and this will lead to plenty of new jobs in the future!

Rebeka Frazer-Chiasson – The Farmer

Rebeka Frazer-Chiasson is the co-owner of La Ferme Terre Partagée, located in Rogersville, New Brunswick. Rebeka explains how there is a place for everyone working at her farm through job or volunteer opportunities as well as the importance of small-scale agriculture on our environmental footprint, and improving food security.

Green Experts Directory Exploration

The Gaia Project's Green Experts Directory showcases existing green career professionals in our province. What type of green job do they have? How did they get where they are now? Has the road to the current job always been smooth?



Browse the different career profiles found in this directory and select three green experts from different fields.

For each one:

1. Read their profile. Write down their name and job title.
2. Create a breakdown of their career path. (See "How I got here" section in each profile.)

Example:

Studies	Opportunity 1	Studies	Opportunity 2	Opportunity 3	Current Job
Aquatic Studies	Research Field Assistant	Masters Environmental Management	Research Assistant	Energy Analyst / Project Coordinator	Outreach Coordinator

3. List two aspects of their current job that you like and two that you dislike.

Green Expert 1: _____

Career Path:

What do you like about this job?

_____

What do you dislike about this job? (Green Expert 1)

_____

Green Expert 2: _____

Career Path:

What do you like about this job?

_____

What do you dislike about this job?

_____

Green Expert 3: _____

Career Path:

What do you like about this job?

_____

What do you dislike about this job?

_____

Green Experts Exploration Reflection

1. How did these Green Experts choose their career?

2. Did every expert in the directory follow a conventional path to their current green job? Explain.

3. What piece of advice offered by green experts resonated most with you? Why?

4. Could you see yourself having one of these jobs in the future? Why, or why not?

Green Experts Panel Playlist

In these Q&A panel sessions, The Gaia Project moderators will be asking our Green Experts about their work, career pathways and more. Students will be able to hear from professionals in a variety of fields related to sustainability and learn about careers in the province.

Green Experts Panel Playlist

Watch one of the panels and reflect on one expert's career pathway and experience.

Panel Title: _____

Green Expert Name: _____

Job Title: _____

Career Pathway:

Example

Studies	Opportunity 1	Studies	Opportunity 2	Opportunity 3	Current Job
Aquatic Studies	Research Field Assistant	Masters Environmental Management	Research Assistant	Energy Analyst / Project Coordinator	Outreach Coordinator

What did you like about this job?

_____

_____

What did you dislike about this job?

_____

_____

Green Experts Panel Reflection

1. What other questions could have been asked to the panelists?

2. Did every panelist follow a conventional path to their current green job? Explain.

3. What comment or advice given by a panelist stood out most for you? Why?

4. Create your own panel line up. Which types of jobs would you like to be featured in this sort of panel? Feel free to share your panel idea with The Gaia Project, we may be able to find Green Experts on in-demand topics for future panels.

Skills, Competencies and Training

Having the appropriate skills, competencies and training, as well as the right mindset and intentions, will enhance someone's chances of landing a green job.

Useful skills and training for green jobs

- A degree in a relevant subject, such as environmental science, biochemistry, sustainability management or electrical vehicle engineering.
- A training course or certificate in a topic relevant to the environmental sector, such as Environmental Awareness training or an apprenticeship in agriculture, energy or manufacturing.
- Practical or technical skills that help you contribute towards a circular economy, such as knowing how to repair electrical equipment or mend clothes.
- Demonstrable transferable skills, like good communication skills, critical thinking, creativity and teamwork, which can be adapted for any industry and any job role.
- Relevant work experience or volunteering, like getting involved in local community sustainability projects or work experience of the industry you want to join.

Common misconceptions

1. Only STEM jobs can be 'green jobs'.

Though green jobs are mostly thought of as being exclusively in STEM fields, the green economy has broadened its reach to encompass all sectors of society. Some green jobs require specific 'green' skills or education, while other positions value other types of skills to complement the company's or organization's environmental efforts.

2. While I am in school, I can't work concretely towards a specific job or career.

While specific education, like a degree, is only attainable after you've graduated, other important attributes of successful green job candidates are obtained through life experiences. Competencies, or transferable skills, knowledge, and attitudes, are developed in various ways, mainly through interactions with others, hands-on experiences, hobbies and interests, and more. They include critical thinking and problem-solving, collaboration, communication, innovation, creativity and entrepreneurship, self-awareness and self-management as well as sustainability and global citizenship.

"Learners need to develop global competencies to meet the shifting and ongoing demands of life, work, and learning; to be active and responsive in their communities; to understand and respect diverse perspectives; and, to act on issues of significance."
(Portrait of a Learner in New Brunswick's Anglophone School System, EECD, p.11)

Learn more about New Brunswick Global Competencies here.

Take a Quiz!!

Not sure what you like or what skills you have? Explore the following quizzes to find what green career could suit you!

Project Learning Tree

Green Jobs Career Personality Quiz

https://pltcanada.org/en/green-jobs-quiz/

ThinkAG

Agriculture and Food Careers Quiz

https://thinkag.ca/en-ca/

Government of Canada

Job Bank's Career Quizzes and Tests

https://www.jobbank.gc.ca/career-planning/quizzes

Note: Each email can access the quiz once for free

1. Which quiz or quizzes did you complete?

2. What were your results?

3. Were you surprised by your results? Did they match your interests or personality? Explain.

4. If your results didn't include a typical 'green' career, how could you make it more environmentally-friendly? Which strategy or strategies would it employ?

Reminder: According to the UN's International Labour Organization, green jobs help the environment through one or more of the following strategies: improving energy and raw materials efficiency, limiting greenhouse gas emissions, minimizing waste and pollution, protecting and restoring ecosystems, and supporting climate change adaptations.

How to Keep Exploring

If you are interested in green jobs...

Be flexible!
Your interests will change over time. That is great! That means you are developing as a person. Read about "non-traditional" career paths to learn about the many routes you can take to get to the same career. Ask adults that you know how they got where they are.

Consider Internships
Internships can be paid, unpaid or part of school coursework. Take some time to understand the difference between an unpaid internship, a mentorship and volunteering.

Apply for Summer jobs
Learn about timelines for summer student grants and how to apply (from the province of New Brunswick and the Federal Government). Make sure you have a well-done cover letter, resume and references ready to go. Sometimes applications start early (January to May), so do not wait until summer to start looking.

You might have an after-school job working in retail to save money and that is great, but keep in mind that more organizations bring people on over the summer through funding programs so your chances of getting a job that matches your interests are higher at that time of year.

Explore Entrepreneurship
This is a wonderful time in your life to try your hand at running a business! You will have less financial and life obligations and can be more flexible in taking risks. Start small and progress. You do not have to register a business right away. If you want to run an eco-tourism program, get your friends together and start planning trips and adventures!

Request an informational interview (with people you do not know)
You can use our Green Experts map to find people who you can approach. You can also find job profiles and videos of interviews and panels from professionals that live and work in New Brunswick.

Volunteer your time
This is a great way to make a contribution to your community and try lots of different things. You might volunteer at events for short commitments or more long-term like after school one evening each week. You will also meet lots of new people, and this can be key to learning about jobs and getting jobs later on.

Particiate in visits and tours
Many companies will have tours a few times a year. If you find some businesses or organizations that you are interested in, you can sign up for their newsletters or email them to see how members of the public can learn more. There are lots of summer opportunities, especially if you are interested in jobs like doing monitoring or restoration work on nature reserves.

There are some spaces that are harder to access. For instance, a business that is working with confidential data, a work site is unsafe to enter without training, or a business that is working on intellectual property. If they do not allow tours, you can try an informational interview instead.

Research in the Federal Government Job Code Data Bank
If you work with a career counselor, they may use these codes. NOC (National Occupational Code) are numbers attached to specific job titles and descriptions. They get used, because one job could have dozens of names, which makes searching for postings harder. For example, someone who sends conservation information to the public on behalf of a non-profit organization could be called a Communications and Digital Media Specialist, a Marketing Consultant, a Public Engagement Officer or even a Fundraising Campaign Manager.

Explore the resources available on YouTube
There are so many resources available, and when you find the right channel people will talk about their successes, but they will often be very honest about their challenges too. You can learn a lot about personal process, values and the many potential paths to reach your goal. Ex. You are interested in being a self-employed organic farmer in the future. You are very keen on growing vegetables. After a few months of learning about other farms, you might decide that you would like to learn how to add workshops, cut flower sales, or eco-tourism to your future farm operation.

Take a short course
There are many courses that are free or very affordable online. You can take a few months over the summer to learn about an interest. Even if you decide in the end that it is not the right fit for you, you will still be better for having more skills and knowledge.

Reflecting on Green Jobs

1. Answer one of the following questions:
a) What environmental issue would you like to solve and how would you solve it?
b) How do you enjoy spending your time (interests, hobbies, etc.)? What do you like about them?
c) What do you want out of a career? What do you want your life to look like?
d) What types of careers wouldn't you see yourself doing? Why?

Question: _____

2. Through the activities in this learning package, you were often asked what aspects you liked or disliked about certain jobs. In your opinion, what kind of skills or competencies would be associated with the aspects you liked? Disliked? How do you think you would be able to develop these skills?

3. Think back about what you initially thought 'green jobs' were. How has your view changed? Have you discovered jobs that you were not aware of?

4. Do you think you could possibly have a green job in the future? What would it be? What are the next steps in getting closer to that goal?

Create a portfolio with your answers on myBlueprint! MyBlueprint is an application that supports students' education as well as career exploration and planning with a one-stop individual pathway planner. Learn more here: https://myblueprint.ca/

Ocean Acidification Part 1

Grade/s: 7 & 8
Subject/s: Science & Mathematics
Minimum Time Required:

Exploration: 35 minutes

Understanding: 25 minutes

Application: 30 minutes

Background

Learners work toward being able to collect a water sample from a local waterway and test for acidification. This learning experience allows learners to explore the relationship between acid and base and assess their understanding by using pH strips or probe ware. Finally, learners can apply their knowledge by testing a local water way and share it with the wider community to increase awareness of climate change.

Key Vocabulary and Concepts

- ocean acidity
- acidification
- waterways
- acidity
- pH levels
- bases
- interconnectiveness

Materials

- Pasco probe ware *optional
- pH strips
- beakers/ containers
- distilled water
- acid *cleaning vinegar

Safety

Learners will be using jars, shells, and acids. Discussion pertaining to safety should take place before beginning. Gloves and safety goggles should be considered when handling any acid, whether lemon juice, vinegar or stronger.

Facilitating the Learning Experience

Spark and Driving Question

(What would grab learner's attention/ interests?)

- Watch "What is Ocean Acidification Video": https://www.youtube.com/watch?v=ogZkV-Yj7Hc
- Learners discuss their thoughts and record their driving questions.

Exploring Acid and Bases:

1) Learners add 15 ml (1 tablespoon) of distilled water to a jar or petri dish
2) Dip the pH strip into the jar/ petri dish for 2 seconds and then record the pH level. *If using a Pasco probe, place pH sensor inside your container and start new experiment in SPARKvue
3) Add 15 ml (1 tablespoon) of acid into the jar/ petri dish containing the distilled water and stir
4) Measure and record pH level after every tablespoon of acid. *Note- pH levels will stop changing after multiple tablespoons. Learners can record the pH number based on the pH key inside packet or colour of strip to incorporate art
5) Share observations

Suggestion: Allow learners to explore various types of acids and levels

Checking for Understanding:

1) Educator fills 4 beakers with 300ml of distilled water labelled A, B & C
2) Educator fills 1 jar with all water, 1 with all acid and 1 with 2/3 water & 1/3 acid.
3) Learners measure pH levels of each beaker to correctly identify beakers from least to greatest acidity using Pasco probe or pH strips

Idea and Plan Creation

(Learners make their plan)

- Learners review experiment and scientific method
- Learners review the plan to test pH levels to understand its relationship to acidity
- Learners use their observations and understanding to compare and classify acidity levels in water
- Learners use their knowledge to come up with a plan to test waterways in nature.

Active Inquiry

(Learners actively explore and participate)

Application of Exploration and Understanding:

- Learners are given probe or pH strips. Learners choose waterways to test.
- Learners measure waterway and record.
- Learner makes conclusions about the water's acidity.

Apply findings to a free inquiry process by circulating through Driving Questions again.

Understanding and Communication

(Putting all the learning together)

- Learners share their findings
- Learners analyze and compare their findings
- Learners draw conclusions

Sharing Knowledge and Future Application

(Acting on it and extension opportunities)

- Learners share their knowledge of acidification with the wider community and how it connects to climate change

At a Glance: Ocean Acidification Part 1

Spark and Driving Question	Idea and Plan Creation	Active Inquiry	Understanding and Communication	of Future Application
What would grab learners' attention/ interest?	**Learners make their plan**	**Learners actively participate and contribute to their own learning**	**Putting all the learning together**	**Acting on it and finding extension opportunities**
Watch https://www.youtube.com/watch?v=ogZkV-Yj7Hc Learners discuss their thoughts and record their driving questions. **Exploration of Acids and Bases** 1) Learners add 15 ml (1 tablespoon) of distilled water to a jar or petri dish 2) Dip the pH strip into the jar/ petri dish for 2 seconds and then record the pH level. *If using a Pasco probe, place pH sensor inside your container and start new experiment in SPARKvue	Learners review the experiment and scientific method. Learners review the plan to test pH levels to understand its relationship to acidity. Learners use their observations and understanding	**Application of Exploration and Understanding:** Learners are given probe or pH strips. Learners choose waterways to test. Learners measure waterway and record. Learners makes conclusions about the water's acidity. Apply findings to a free inquiry process by circulating through Driving Questions again.	Learners share their findings Learners analyze and compare their findings Learners draw conclusions	Learners share their knowledge of acidification with the wider community and how it connects to climate change

3) Add 15 ml (1 tablespoon) of acid into the jar/ petri dish containing the distilled water and stir 4) Measure and record pH level after every tablespoon of acid. *Note- pH levels will stop changing after multiple tablespoons. Learners can record the pH number based on the pH key inside packet or colour of strip to incorporate art 5) Share observations Suggestion: Allow learners to explore various types of acids and levels **Checking for Understanding:** 6) Educator fills 4 beakers with 300ml of distilled water labelled A, B & C 7) Educator fills 1 jar with all water, 1 with all acid and 1 with 2/3 water & 1/3 acid. 8) Learners measure pH levels of each beaker to correctly identify beakers from least to greatest acidity using Pasco probe or pH strips	to compare and classify acidity levels in water. Learners use their knowledge to come up with a plan to test waterways in nature.			
Resources and Materials	**Resources and Materials**	**Resources and Materials**	**Resources and Materials**	**Resources and Materials**
		Pasco Probeware pH strips Beakers/ Containers Distilled Water Acid*		

Cross-Curriculum Outcomes

Provincial Curriculum: Nova Scotia Provincial Curriculum *Grade 7 & 8 Renewed

Grade	Science	Mathematics
7	Learners will analyze particle theory in relation to substances in environments. Learners will analyze the interconnectiveness of living things and the environment, in relation to the concept of Netukulimk. *Learners will analyze factors that affect coastline change.	Students will be expected to solve problems involving percent from 1% to 100% (limited to whole numbers) Students will be expected to compare, order, and position positive fractions, positive decimals (to thousandths), and whole numbers by using benchmarks, place value, and equivalent fractions and/or decimals. Students will be expected to create a table of values from a linear relation, graph the table of values, and analyze the graph to draw conclusions and solve problems.
8	Learners will evaluate oceanographic and other evidence of climate change inclusive of Mi'kmaw perspective. Learners will evaluate the impact of human activity on climate change.	Students will be expected to demonstrate an understanding of and solve problems involving percent's greater than or equal to 0%. Students will be expected to demonstrate an understanding of ratio and rate. Students will be expected to graph and analyze two variable linear relations. Students will be expected to critique ways in which data is presented.

Atlantic Canada Curriculum Connections

New Brunswick:
https://www2.gnb.ca/content/gnb/en/departments/education/k12/content/anglophone_sector/curriculum_anglophone.html

Newfoundland & Labrador:
https://www.gov.nl.ca/education/k12/curriculum/guides/

Prince Edward Island:
https://www.princeedwardisland.ca/en/information/education-and-lifelong-learning/programs-of-study

Ocean Acidification Part 2

Grade: 7 & 8
Subject/s: Science, Social Studies, Math
Minimum Time Required: 1 hour

Background

Climate change and the increase of Greenhouse gases has had a great impact on oceans and those who live within it. Ocean acidification is just one of the effects increased by climate change. Unfortunately, many creatures especially shelled sea creatures are greatly affected by ocean acidification. Learners explore and observe the impact of increased acid in water and what the acidification of shells really looks like. Learners leave having a better understanding of what that not only means for the shelled animal but those who rely on them.

Key Vocabulary and Concepts

- ocean acidity
- acidification
- waterways
- acidity
- pH levels
- bases
- interconnectiveness
- oysters

Materials

- variety of shells (eggs, beach shells)
- variety of acids (vinegar, lemon juice)
- jars
- distilled water

Safety

Learners will be using jars, shells, and acids. Discussion pertaining to safety should take place before beginning. Gloves and safety goggles should be considered when handling any acid, whether lemon juice, vinegar or stronger.

Facilitating the Learning Experience

Spark and Driving Question

(What would grab learner's attention/ interests?)

- Watch "What is Ocean Acidification" video: https://www.youtube.com/watch?v=gZGj0BbDT38
    - Learners will be introduced to ocean acidification, what it is and what is causes.
- Learners are provided a variety of acids and shells to explore the effects of acidification on shells and shelled animals.
- Educator can facilitate discussions that lead to driving questions and conversation around acids, bases and shells.

Idea and Plan Creation

(Learners make their plan)

- Learners choose how to test acidification on the shell.
- Learners choose the acidity level by lowering the pH level of the water using an acid* such as vinegar.
- Learners can choose to fill their jar with various ratios of diluted acids.
- Learners are encouraged to build their own graphic organizer and table to collect their data.

Active Inquiry

(Learners actively explore and participate)

- Learners are supplied with:
    - jar
    - distilled water
    - acid (vinegar)
    - shell (egg)
- Learners add amount of distilled water and/ or acid from their plan.
- Learners record their observation of the shell at set intervals
- Learners share their observations and notes.

Understanding and Communication

(Putting all the learning together)

- Compare observations with other learners.

Sharing Knowledge and Future Application

(Acting on it and extension opportunities)

- Watch Oyster Farmers and Ocean Acidification video: https://www.youtube.com/watch?v=QRmWXKbKQYw
    - Learners can watch this video to understand how ocean acidification can affect living and non-living things such as oysters in a habitat similar to oyster farms in Nova Scotia.
- Reflect and discuss:
    - Impacts on communities and food sustainability
    - Using what you have learned, make a new action plan.

At a glance: Ocean Acidification Part 2

Spark and Driving Question	Idea and Plan Creation	Active Inquiry	Understanding and Communication	Future Application
What would grab learners' attention/ interest?	**Learners make their plan**	**Learners actively participate and contribute to their own learning**	**Putting all the learning together**	**Acting on it and finding extension opportunities**
Watch "What is Ocean Acidification video" https://www.youtube.com/watch?v=gZGj0BbDT38 Learners are provided a variety of acids and shells. Facilitated questions and conversation around acids, bases and shells.	Learners choose how to test acidification on the shell. Learners choose the acidity level by lowering the pH level of the water using an acid* such as vinegar. Learners can choose to fill their jar with various ratios of diluted acids.	Learners are supplied with: - jar - distilled water - acid (vinegar) - shell (egg) Learners add amount of distilled water and/ or acid from their plan. Learners record their observation of the shell intermittently.	Compare observations with other learners.	Watch "Oyster Farmers and Ocean Acidification" https://www.youtube.com/watch?v=QRmWXKbKQYw Reflect and discuss: Impacts on communities and food sustainability Possible learning extension: Using what you have learned, make a new action plan.

		Learners share their observations and notes.		
Resources and Materials	**Resources and Materials**	**Resources and Materials**	**Resources and Materials**	**Resources and Materials**
Video Variety of: Shells Acids		jars distilled water acid (vinegar) shell (egg) notebook pencils		

Cross-Curriculum Outcomes

Provincial Curriculum: Nova Scotia Provincial Curriculum *Grade 7 & 8 Renewed

Grade	Science
7	Learners will analyze particle theory in relation to substances in environments. Learners will analyze the interconnectiveness of living things and the environment, in relation to the concept of Netukulimk. Learners will investigate factors that affect species adaptation and evolution. *Learners will analyze factors that affect coastline change.
8	Learners will analyze how the characteristics of cells relate to the needs of the organism. Learners will evaluate oceanographic and other evidence of climate change inclusive of Mi'kmaw perspective.

Atlantic Canada Curriculum Connections

New Brunswick:
https://www2.gnb.ca/content/gnb/en/departments/education/k12/content/anglophone_sector/curriculum_anglophone.html

Newfoundland & Labrador:

https://www.gov.nl.ca/education/k12/curriculum/guides/

Prince Edward Island:

https://www.princeedwardisland.ca/en/information/education-and-lifelong-learning/programs-of-study

30 Minutes

Adapt and Overcome

Over thousands of years, animals have changed what they look like and how they do things to suit the conditions of their environment. This is called adaptation. Adaptations help you survive and thrive. Those living in the cold have grown thick fur or blubber to keep warm, while those in warm places have developed ways of cooling their bodies and preserving water. Some have grown long claws, beaks, or necks. Some have learned to walk, and others ways to climb, fly, or change color. An adaptation is required when we cannot avoid the conditions of the environment. As climate change affects us all with warmer land and water temperatures, leading to changing weather conditions, humans must now adapt too.

Changing Behaviour

We are surrounded by nature. If we look after it well, it has the ability to provide us with everything we need. Recently, human activity has led to huge changes in nature. How could you adapt what you normally do every day in order to positively impact the environment around you? Write a sentence or draw a picture in the space provided to explain.

Food Adaptation

Our access to food is changing. Some of us have less choices and options. What adaptation would you choose to make in order to deal with this change? What things could you eat more of or less of that could help you better deal with climate change?

Heat Adaptation

It is no secret that our atmosphere is getting warmer in most parts of the world. What adaptation would you make in order to help your body better deal with heat?

Other Adaptations

You've suggested three ways you could adapt so far but the final choice is up to you! It could affect how you move or how you engage with the world. It could be your strategy to deal with extreme weather, or maybe its a skill you wish to develop.

45 Minutes

WHAT MAKES OUR "STUFF?"

1. OBSERVE AND RECORD

In pairs, walk around your room and school grounds and identify 10 different objects. Think about 10 of your favourite things that you have at home.

List them all on the left side of a double T-Chart in your workbook.

2. LOOK AT THE RESOURCES BELOW

3. CLASSIFY THE LIST

On the right hand side of your T-Chart, indicate what natural resources your items have come from. They may have come from multiple resources. if you are unsure, use the internet to help you discover what materials are used!

4. RENEWABLE

Which resources are renewable?
Which resources have an environmental connection?

5. OVERUSE

What happens when resources are overused?
How does resource overuse relate to a changing climate?

6. BE CIRCULAR

Find out what 'circular economy' means, and how it could help. Are any of your items from a circular thinking provider? How can we change our consumption of resources?

Conservation Corps Newfoundland and Labrador

10-12

Climate Education Resources

EXPLORING GREEN JOBS IN NEW BRUNSWICK

LEARNING PACKAGE

DEFINING GREEN JOBS

- What is a Green Job?
- Green Job Jumbler
- How Green is Your Job?

GREEN JOBS IN NEW BRUNSWICK

- Exploring Types of Jobs
- Green Experts Directory Exploration
- Green Experts Panel Playlist

SKILLS AND INTERESTS

- Skills, Competencies and Training
- Take a Quiz!

WRAP UP

- How to Keep Exploring
- Reflecting on Green Jobs

Land Acknowledgment

This document was produced on the unceded and unsurrendered territories of the Wolastoqiyik, Mi'kmaq and Peskotomuhkati peoples of the Wabanaki Confederacy. The Gaia Project will do our best to support the sharing of Indigenous knowledge and culture in our work. We will collaborate with community knowledge keepers, humbly listen and learn about how we can honour the Peace and Friendship Treaties.

About the Learning Package

The Exploring Green Jobs in New Brunswick learning package is designed to help grade 6-12 students learn more about green jobs in our province. The package contains a wide range of information and related activities, which fall under the following topics:

Defining Green Jobs
Green Jobs in New Brunswick
Skills and Interests
Wrap Up

While these topics can be explored in any particular order, the last one (Wrap Up) is meant as a summary exercise. Students can complete any or all of the proposed activities individually, in groups, or in a class-wide discussion.

Interested in going further with your students?

The Gaia Project has a network of industry professionals who are passionate about their green jobs and who are available to:

- Give presentations
- Consult and provide guidance on climate action projects
- Offer mentorship opportunities

The Green Experts Program was created to showcase existing green careers in the province to help inspire youth in joining New Brunswick's clean growth economy.

Visit our website to request a presentation on these exciting careers in your classroom!

What is a Green Job?

Traditionally, green jobs have been defined as jobs that have a direct and positive impacts on the planet such as jobs related to renewable energy, electric transportation, energy efficiency or nature conservation. However, in the last few years, this definition has broadened significantly, as the economy transitions, every job has the potential to be a green job.

The United Nation's International Labour Organization (ILO) defines green jobs as "jobs that contribute to preserving or restoring the environment by incorporating one or more of the following aspects:

- improving energy and raw materials efficiency;
- limiting greenhouse gas emissions;
- minimizing waste and pollution;
- protecting and restoring ecosystems;
- and supporting adaptation to the effects of climate change".

Improving energy and raw materials efficiency

In the fight against climate change, climate-friendly practices that would improve energy and raw materials efficiency are very important. While there has been a transition towards renewable energy in the last few decades, non-renewable energy is still the norm in most places. Not only are these non-renewable energy sources running out, but they are also bad for the environment due to how they are extracted or used. This is why it is so important to improve energy and raw materials efficiency.

Examples of jobs (found on GREEN EXPERT - Energy) :

- Manager of Global Resource Efficiency at McCain Foods - manages goals and commitments for reducing water usage, CO2 emissions, food waste and switching over to renewable energy.
- Energy Analyst at City of Fredericton - ensures that all buildings in the City of Fredericton's portfolio have fully functional heating, ventilation, and air conditioning (HVAC) systems, that they work at their peak efficiency, and that they only operate when required to use the least amount of energy as possible.
- Education and Outreach Coordinator at Net Zero Atlantic - creates educational material and provides training and support to stakeholders within a research organization that focuses on creating a sustainable energy sector by leading applied research in critical topics.

Limiting greenhouse gas emissions

This is arguably the most crucial aspect in the fight against climate change. Limiting and reducing greenhouse gas emissions is extremely important and can be done on many different levels and in various ways. While many actions can be taken on a personal level to reduce your own greenhouse gas emissions, it is important that companies and businesses also put in the effort to reduce their carbon footprint.

Examples of jobs (found on GREEN EXPERT-Sustainability) :

- Communications and Sustainability Specialist at the Port Saint John - aims to better plan and implement sustainability initiatives covering many topics such as creating a decarbonization plan and an energy transition plan.
- Senior Consultant at Sustainability Solutions Group - focuses on helping clients identify pathways to decrease energy use and greenhouse gas emissions in their community, and adapt to the impacts of climate change.
- Climate change officer at the University of New Brunswick - researches and plans programs and policies to help the university address climate change.

Minimizing waste and pollution

There is a subtle difference between waste and pollution. Waste is unwanted or unusable materials, some being biodegradable and others not, while pollution refers specifically to wastes that are harmful to the environment. Find out more here.

Non-biodegradable and hazardous waste can be found in our oceans, soils, fresh water and landfills which in turn have negative effects on our climate, human health, wildlife, and ecosystems. Humans have been producing too much waste; but luckily, more and more people are taking the initiative to minimize and better manage waste and pollution.

Examples of jobs:

- Communications Coordinator at Encorp Atlantic – manages the website and social media accounts for a leading organization in recycling and industry stewardship. (GREEN EXPERT - Waste)
- Director for Southeast Eco360 – with the help of their staff, works hard to educate citizens on proper waste sorting and management, all while being key members of New Brunswick's sustainable waste management effort.
- Air Quality Monitor for the Province of New Brunswick – monitors air quality in the province to minimize air pollution and protect environmental and human health.

Protecting and restoring ecosystems

An ecosystem is a biological community of interacting organisms (plants, animals, micro-organisms, etc.) and their physical environment.

Climate change, excessive waste, poor waste management, deforestation, urban development, and the use of pesticides, for example, can all have negative effects on wildlife and ecosystems. It is very important for us to take the necessary steps to protect and restore our ecosystems and biodiversity. Learn more about ecosystems here.

Examples of jobs:

- Director of Conservation at Nature NB - creates plans and implements actions that benefit wildlife, species at-risk, and a variety of habitats with the help of a team of staff and volunteers.
- Communications Officer with the Conservation Council of New Brunswick – manages websites and social media accounts, and writes content for an organization that promotes environmental stewardship.
- Project Leader with the Petitcodiac Watershed Alliance – leads a particular project for a non-profit organization that works to protect the Petitcodiac and Memramcook Rivers and their tributaries.

Supporting adaptation to the effects of climate change

Mitigation and adaptation are two separate things that can go hand in hand when it comes to climate change. In fact, climate change mitigation means trying to avoid and reduce emissions to lessen the effects of climate change, whereas climate change adaptation means changing our behaviours, systems, and ways of life, in order to adapt to the changing climate. However, if we keep mitigating these effects, it will be easier for us to adapt to the unavoidable changes. (Find out more here)

Climate change adaptation can vary from one place to another, so it is important to understand the local risks before planning adaptation solutions and strategies. These strategies can include planting crops that can tolerate warmer weather, building infrastructure that can withstand extreme weather conditions such as flooding and high winds, as well as managing our natural resources wisely and sustainably. We can all do our part in trying to reduce the impacts of climate change, as well as adapt to the changing effects.

Examples of jobs:

- Environmental Strategist for the City of Fredericton - oversees the implementation of the actions in the Climate Plans to reach environmental targets (GREEN EXPERT - Sustainability)
- Policymaker with your local or provincial government – works hard on creating plans and policies regarding the environment, including mitigation and adaptation. Take a look at New Brunswick's Climate Change Action Plan here.
- Project Manager at Fundy Solar Ltd. – designs and installs solar power systems.

Green Job Jumbler

According to the UN's International Labour Organization, green jobs help the environment through one or more of the following strategies. Match the jobs listed below to the strategy that best fits their area of work.

Energy Auditor	Environmental Lawyer	Architect
Electric Vehicle Technician	Public Transportation Planner	Policy Advisor
Environmental Scientist	City Planner	Urban Farmer
Construction Manager	Solar Installer	Sustainability Consultant
Climate Change Officer	Environmental Engineer	Recycling Worker
Renewable Energy Engineer	Biologist	Chemical Engineer
Tourism Director	Wind Turbine Technician	Public Engagement Officer
Hydrologist	Land Trust Manager	Conservation Coordinator

Improving energy and raw material efficiency	**Limiting greenhouse gas emissions**	**Minimizing waste and pollution**	**Protecting and restoring ecosystems**	**Supporting climate change adaptation**

Green Job Jumbler Reflection

1. Could one or more of these jobs have been placed under multiple strategies? Provide an example and explain under which other strategy (or strategies) it could have fallen.

2. In your opinion, should green jobs focus on a single strategy or should they try to cover as many strategies as possible? Explain.

3. If you had to choose one of these jobs as your future career, which one would you pick? What aspects of that particular job appeal to you? Explain.

How Green is Your Job?

As the economy transitions, a lot more jobs have the potential to be "green jobs". At The Gaia Project, a green career is any job or self-employment venture that genuinely contributes to a more sustainable world.

Do any of your family or friends have a green job? Could their jobs be greener than you think? Interview someone you know to learn more about their job!

Interview Questions:

1. What is your work title and what are your main responsibilities?

_____

_____

_____

_____

2. What about your job is linked to sustainability?

_____

_____

_____

_____

3. Do you think your job could be greener? If yes, how? If no, why not?

_____

_____

_____

_____

Interview Reflection

1. Do you think you would enjoy working in your interviewee's position? What aspects of their main responsibilities do you like? Dislike? Explain.

2. In your opinion, is your interviewee's job a 'green job'? Under what strategy or strategies would their job fall? Explain.

3. Think of ways to make your interviewee's job greener. Don't be afraid to think outside the box: could their means of commuting or travel, the products they use or buy, or their energy consumption be more environmentally friendly? If your interviewee's job is already green, think of ways to make another job greener.

Reminder: According to the UN's International Labour Organization, green jobs help the environment through one or more of the following strategies: improving energy and raw materials efficiency, limiting greenhouse gas emissions, minimizing waste and pollution, protecting and restoring ecosystems, and supporting climate change adaptations.

Exploring Types of Jobs

Green jobs are essential for future-proofing the planet. There is still a long way to go if we are to reverse the environmental damage that has been done and tackle the impending climate crisis, but there is also enormous potential in the job market to help make those necessary changes to the way we live and grow as a society.

While green jobs can be found in almost any industry in New Brunswick, the term is relatively new and roles that are described as 'green' are only just beginning to emerge on the job market. To help students get a taste of New Brunswick's growing green economy, we have compiled recent job advertisements in this document, organized by personality characteristics, hobbies, and likes.

"The Helper"

For people who value supporting other people

You have these characteristics, hobbies, and likes:

- You enjoy working in teams
- You are patient and good at listening to people's concerns
- You are curious about why people behave the way they do
- You like understanding how human health and environmental issues are connected
- You like reading, writing, speaking or making art to share stories or messages
- You like working with different groups; children, seniors, people with special needs, etc.
- You might feel passionate about working with animals.
- History, social studies and political science might be courses that interest you

Take a look at a sample of New Brunswick job advertisements to learn more:

- Respiratory Therapist – Vitalite, Lameque
- Emergency Management Coordinator - Red Cross, Moncton
- Regional Director of Population Health – Horizon Health, location negotiable
- Capital and Housing Director – Natoageneg First Nation, Eel Ground
- Climate Change Coordinator– EOS Eco-Energy, Sackville

Other kinds of jobs for helpers:

- Behavioral Researcher
- Teacher or professor
- Workshop-based Public Educator
- Public Policy Analyst
- Consultation Specialist on Indigenous Rights
- Executive Director at a non-profit
- Community Projects Coordinator

"The Outdoor Enthusiast"

For people who feel best when they are in nature

You have these characteristics, hobbies, and likes:

- Your ideal vacation is hiking, camping, climbing, fishing, skiing, paddling etc.
- You go to nature when you are stressed and need to re-focus
- You enjoy physical activity
- You take comfort in understanding ecology and how nature works
- You are very safety conscious
- You feel comfortable being in remote places
- You are interested in learning how to use tools and equipment (maybe technical sports and camping gear and some of your favorite things to buy)
- Biology, geography and ecology might be courses of interest for you

Take a look at a sample of New Brunswick job advertisements to learn more:

- Intermediate Environmental Scientist – Wood Plc, Fredericton
- Conservation Manager - The Nature Trust of New Brunswick
- Forest School Educator – Cedar Brook Early Learning Centre, Fredericton
- Project Manager - Fundy Biosphere Region
- Harvest Treatment Supervisor (Forestry) – ACFOR, Cocagne offices (with out of province travel required)

Other kinds of jobs for outdoor enthusiasts:

- Restoration Coordinator/Specialist
- Lab Technician
- Environmental Impact Assessment Technician
- Wetland Delineation Specialist
- Regenerative farmer (all types, animals, produce, orchards)
- Forester/ Forest Technician
- Ecologist
- Biologist
- Environmental Researcher
- Eco-tourism Operator
- Tour Guide
- Invasive species expert

"The Analyst"

For people who like data and solving technical problems

You have these characteristics, hobbies, and likes:

- You likely have some experience coding or building 3D models
- Maybe your favourite games are world-building ones, like Minecraft or Settlers of Catan
- You like to really understand a problem before you try to solve it
- You might like understanding all of the parts of complicated systems, like capturing and storing drinking water, getting it into homes and then treating it and releasing it back into the watershed
- You might take time to carefully research the specs. on an item before you buy it
- Taking apart something to see how it works might not be enough for you, you may need to understand the physics or chemistry behind why it works
- Physics, automotive, computer science and math might be courses of interest to you

Take a look at a sample of New Brunswick job advertisements to learn more:

- Buildings Mechanical Engineer – CBCL Ltd., Saint John
- Forestry Management Software Solutions Analyst – Remsoft software, Fredericton
- Aquatic Research Technician – Huntsman Marine Science Centre, St. Andrews
- Water Resources Specialist – Environment and Climate Change Canada, Fredericton
- Climate Change Science and Adaptation Specialist – CLIMAtlantic, remote from anywhere in Atlantic Canada

Other kinds of jobs for analysts:

- Environmental Technologist/Scientist
- Bioremediation Technologist
- Urban Planner
- Energy Advisor
- Home Energy Auditor
- Chemist
- Meteorologist
- Hydrologist
- Environmental Consultant
- GIS Analyst

"The Creative"

For people who like to design, tell stories, and solve problems in unconventional ways

You have these characteristics, hobbies, and likes:

- You might be someone who thinks best with a pen and paper – writing, drawing, making origami and models
- In a group problem-solving session, your solution might look very different from others
- You might have friends with different hobbies and interests than you do
- You might have come up with ways to make really boring jobs fun
- You would be very excited to re-decorate your bedroom or create a blueprint for your dream home
- You probably like complex, action-related projects like figuring out how to reduce food waste at your school or getting students involved in active transportation
- Art, English, Social Studies, Independent Studies and Woodshop might be courses of interest to you

Take a look at a sample of New Brunswick job advertisements to learn more:

- Executive Director – Really Local Harvest – Greater Moncton area
- Bilingual Content and Social Media Manager – ALUS – Anywhere in N.B remote
- Climate Change Officer – UNB, Fredericton
- Urban Planner – Fundy ARK Development, Saint John
- Marketing Specialist - Clean Energy Associates - Anywhere in Canada remote

Other kinds of jobs for creatives:

- Architect
- Urban and Rural Planner
- Communication Specialist
- Graphic designer
- Videographer
- Lifecycle Analyst
- Waste Diversion Manager
- Executive Director (non-profit)

"Hands-on"

For people who like to combine problem solving with physical work

You have these characteristics, hobbies, and likes:

- You always want to take things apart to see how they work on the inside
- You would rather design and fabricate something than buy it
- You do a lot of repair jobs yourself, fixing your bike, car, doing DIY projects
- You don't mind working outside and moving around all day
- You probably have a good idea about how homes and buildings operate
- You would be excited to take on a challenge like building an off-grid, tiny house
- Automotive, Woodshop, Physics and Math might be courses of interest to you

Take a look at a sample of New Brunswick job advertisements to learn more:

- Energy Advisor -Homesol (Saint John)
- Solar Installer – KV Energy Solutions (Rothesay)
- Wind Turbine Technician – EPiK Energy and Renewables (Albert County)
- EV Mechanic (Red Seal Technician) – Steele Auto Group (Volkswagen Moncton)
- HVAC Mechanic – Degree Commercial Inc. (Woodstock)

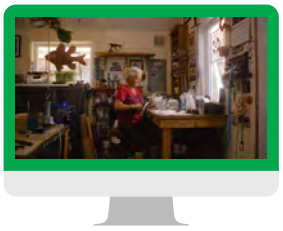
Other kinds of jobs for hands-on people:

- Solar, wind or geothermal installer
- Landfill Operator
- Heavy Machinery Operator
- Contractor
- Electrician
- Mechanic
- Carpenter

Don't see yourself in just one of these categories? Don't worry, some people have a lot of interests and like to work on diverse tasks. A few generations ago, people worked full-time at one or two jobs for most of their life. Things are different now and you will get to have as many experiences in your work-life as you like.

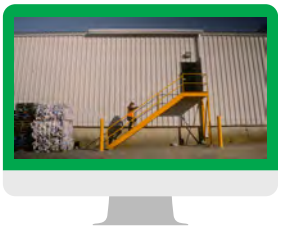
You might be an entrepreneur, you might work a few part-time jobs, or find you are satisfied doing volunteer work that aligns with your interests. Some people even do different kinds of work at different times of the year, for example, you could run whale watching tours and marine education seminars spring to fall and spend your winter writing, working in retail or doing fundraising for an environmental non-profit.

Green Experts Video Playlist



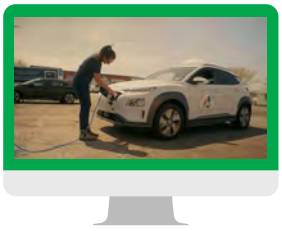
Alanna Baird – The Artist

Alanna Baird of St. Andrews, New Brunswick, discusses how art can be a form of professional environmental engagement. Through her pieces, Alanna has become a staple in her community, repurposing tin cans and other metals to create mystical, oceanic sculptures



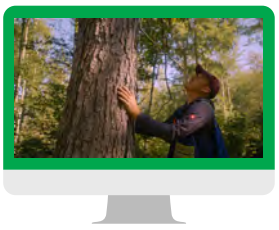
Barb Sharp – The Recycler

Barb Sharp is the Waste Diversion Manager at the Western Valley Regional Service Commission in Centreville, New Brunswick. Through her work, she helps ensure people living in the region are taught how to properly recycle and reduce their waste, and make sure the process runs smoothly at the local waste sorting facilities.



Courtney Piercy – The Biologist & Zaria Sorel – The Sustainability Manager

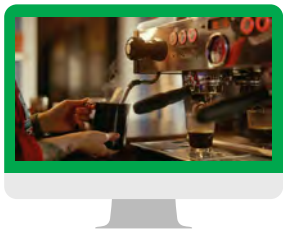
Courtney Piercy is a Project Biologist, and Zaria Sorel is the Sustainability Manager at Eastern Charlotte Waterways in Blacks Harbour New Brunswick. Courtney explains how marine protection in the Bay of Fundy is important to the local economy, culture and environment. Zaria's commentary, however, is focused on another area of concern for ECW: the innovative electric vehicle car-share program, and the new indoor farm in Blacks Harbour!



Shawn McGrath – The Forest Technician

Shawn McGrath is a Forest Technician at ACFOR in Cocagne, New Brunswick. Shawn spotlights the importance of restorative forestry practices, and the diversity of opportunities that come with working in healthy forests. The work Shawn does at ACFOR showcases that industry and conservation can work together in the forestry industry and that a lot can be done to reduce GHG emissions associated with forestry.

Luc Doucette and Marie-Paule Deveau – The Social Entrepreneurs



Luc Doucette and Marie-Paule Deveau are the co-owners of ForêStation Café in Rogersville, New Brunswick. Together, they highlight the value of opening a café in their community that eventually morphed into a social enterprise that contains a bulk grocery store. Luc and Marie-Paule know first-hand that sustainability can build a brand!

Brian McCain – The Director & Ansie Van Wijk – The Engineer

Brian McCain is the Global Director for Environment & Resource-Efficient Operations and Ansie Van Wijk is Manager for Global Resource-Efficient operations at McCain Foods in Florenceville, New Brunswick. Together, they discuss how their work focuses on making the systems and processes involved in manufacturing as efficient as possible by reducing water, energy, and material waste.

Will McGivney – The Engineer

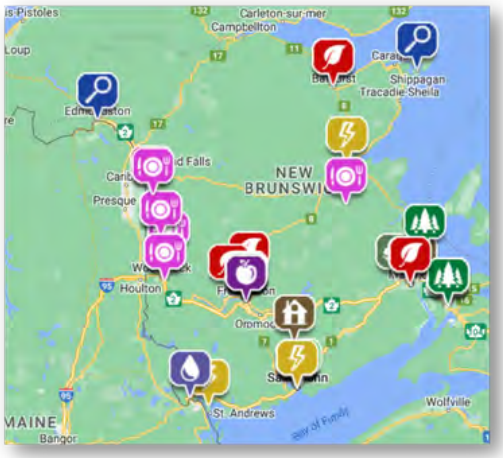
Will McGivney is a Project Engineer at Saint John Energy in Saint John, New Brunswick. Will discusses the environmental and financial importance of renewable energy in the future of energy here in New Brunswick. The energy sector is rapidly changing with new and innovative technology, and this will lead to plenty of new jobs in the future!

Rebeka Frazer-Chiasson – The Farmer

Rebeka Frazer-Chiasson is the co-owner of La Ferme Terre Partagée, located in Rogersville, New Brunswick. Rebeka explains how there is a place for everyone working at her farm through job or volunteer opportunities as well as the importance of small-scale agriculture on our environmental footprint, and improving food security.

Green Experts Directory Exploration

The Gaia Project's Green Experts Directory showcases existing green career professionals in our province. What type of green job do they have? How did they get where they are now? Has the road to the current job always been smooth?



Browse the different career profiles found in this directory and select three green experts from different fields.

For each one:

1. Read their profile. Write down their name and job title.
2. Create a breakdown of their career path. (See "How I got here" section in each profile.)

Example:

Studies	Opportunity 1	Studies	Opportunity 2	Opportunity 3	Current Job
Aquatic Studies	Research Field Assistant	Masters Environmental Management	Research Assistant	Energy Analyst / Project Coordinator	Outreach Coordinator

3. List two aspects of their current job that you like and two that you dislike.

Green Expert 1: _____

Career Path:

What do you like about this job?

_____

What do you dislike about this job? (Green Expert 1)

_____

Green Expert 2: _____

Career Path:

What do you like about this job?

_____

What do you dislike about this job?

_____

Green Expert 3: _____

Career Path:

What do you like about this job?

_____

What do you dislike about this job?

_____

Green Experts Exploration Reflection

1. How did these Green Experts choose their career?

2. Did every expert in the directory follow a conventional path to their current green job? Explain.

3. What piece of advice offered by green experts resonated most with you? Why?

4. Could you see yourself having one of these jobs in the future? Why, or why not?

Green Experts Panel Playlist

In these Q&A panel sessions, The Gaia Project moderators will be asking our Green Experts about their work, career pathways and more. Students will be able to hear from professionals in a variety of fields related to sustainability and learn about careers in the province.

Green Experts Panel Playlist

Watch one of the panels and reflect on one expert's career pathway and experience.

Panel Title: _____

Green Expert Name: _____

Job Title: _____

Career Pathway:

Example

Studies	Opportunity 1	Studies	Opportunity 2	Opportunity 3	Current Job
Aquatic Studies	Research Field Assistant	Masters Environmental Management	Research Assistant	Energy Analyst / Project Coordinator	Outreach Coordinator

What did you like about this job?

_____

_____

What did you dislike about this job?

_____

_____

Green Experts Panel Reflection

1. What other questions could have been asked to the panelists?

2. Did every panelist follow a conventional path to their current green job? Explain.

3. What comment or advice given by a panelist stood out most for you? Why?

4. Create your own panel line up. Which types of jobs would you like to be featured in this sort of panel? Feel free to share your panel idea with The Gaia Project, we may be able to find Green Experts on in-demand topics for future panels.

Skills, Competencies and Training

Having the appropriate skills, competencies and training, as well as the right mindset and intentions, will enhance someone's chances of landing a green job.

Useful skills and training for green jobs

- A degree in a relevant subject, such as environmental science, biochemistry, sustainability management or electrical vehicle engineering.
- A training course or certificate in a topic relevant to the environmental sector, such as Environmental Awareness training or an apprenticeship in agriculture, energy or manufacturing.
- Practical or technical skills that help you contribute towards a circular economy, such as knowing how to repair electrical equipment or mend clothes.
- Demonstrable transferable skills, like good communication skills, critical thinking, creativity and teamwork, which can be adapted for any industry and any job role.
- Relevant work experience or volunteering, like getting involved in local community sustainability projects or work experience of the industry you want to join.

Common misconceptions

1. Only STEM jobs can be 'green jobs'.

Though green jobs are mostly thought of as being exclusively in STEM fields, the green economy has broadened its reach to encompass all sectors of society. Some green jobs require specific 'green' skills or education, while other positions value other types of skills to complement the company's or organization's environmental efforts.

2. While I am in school, I can't work concretely towards a specific job or career.

While specific education, like a degree, is only attainable after you've graduated, other important attributes of successful green job candidates are obtained through life experiences. Competencies, or transferable skills, knowledge, and attitudes, are developed in various ways, mainly through interactions with others, hands-on experiences, hobbies and interests, and more. They include critical thinking and problem-solving, collaboration, communication, innovation, creativity and entrepreneurship, self-awareness and self-management as well as sustainability and global citizenship.

"Learners need to develop global competencies to meet the shifting and ongoing demands of life, work, and learning; to be active and responsive in their communities; to understand and respect diverse perspectives; and, to act on issues of significance."
(Portrait of a Learner in New Brunswick's Anglophone School System, EECD, p.11)

Learn more about New Brunswick Global Competencies here.

Take a Quiz!!

Not sure what you like or what skills you have? Explore the following quizzes to find what green career could suit you!

Project Learning Tree

Green Jobs Career Personality Quiz

https://pltcanada.org/en/green-jobs-quiz/

ThinkAG

Agriculture and Food Careers Quiz

https://thinkag.ca/en-ca/

Government of Canada

Job Bank's Career Quizzes and Tests

https://www.jobbank.gc.ca/career-planning/quizzes

Note: Each email can access the quiz once for free

1. Which quiz or quizzes did you complete?

2. What were your results?

3. Were you surprised by your results? Did they match your interests or personality? Explain.

4. If your results didn't include a typical 'green' career, how could you make it more environmentally-friendly? Which strategy or strategies would it employ?

Reminder: According to the UN's International Labour Organization, green jobs help the environment through one or more of the following strategies: improving energy and raw materials efficiency, limiting greenhouse gas emissions, minimizing waste and pollution, protecting and restoring ecosystems, and supporting climate change adaptations.

How to Keep Exploring

If you are interested in green jobs...

Be flexible!
Your interests will change over time. That is great! That means you are developing as a person. Read about "non-traditional" career paths to learn about the many routes you can take to get to the same career. Ask adults that you know how they got where they are.

Consider Internships
Internships can be paid, unpaid or part of school coursework. Take some time to understand the difference between an unpaid internship, a mentorship and volunteering.

Apply for Summer jobs
Learn about timelines for summer student grants and how to apply (from the province of New Brunswick and the Federal Government). Make sure you have a well-done cover letter, resume and references ready to go. Sometimes applications start early (January to May), so do not wait until summer to start looking.

You might have an after-school job working in retail to save money and that is great, but keep in mind that more organizations bring people on over the summer through funding programs so your chances of getting a job that matches your interests are higher at that time of year.

Explore Entrepreneurship
This is a wonderful time in your life to try your hand at running a business! You will have less financial and life obligations and can be more flexible in taking risks. Start small and progress. You do not have to register a business right away. If you want to run an eco-tourism program, get your friends together and start planning trips and adventures!

Request an informational interview (with people you do not know)
You can use our Green Experts map to find people who you can approach. You can also find job profiles and videos of interviews and panels from professionals that live and work in New Brunswick.

Volunteer your time
This is a great way to make a contribution to your community and try lots of different things. You might volunteer at events for short commitments or more long-term like after school one evening each week. You will also meet lots of new people, and this can be key to learning about jobs and getting jobs later on.

Particiate in visits and tours
Many companies will have tours a few times a year. If you find some businesses or organizations that you are interested in, you can sign up for their newsletters or email them to see how members of the public can learn more. There are lots of summer opportunities, especially if you are interested in jobs like doing monitoring or restoration work on nature reserves.

There are some spaces that are harder to access. For instance, a business that is working with confidential data, a work site is unsafe to enter without training, or a business that is working on intellectual property. If they do not allow tours, you can try an informational interview instead.

Research in the Federal Government Job Code Data Bank
If you work with a career counselor, they may use these codes. NOC (National Occupational Code) are numbers attached to specific job titles and descriptions. They get used, because one job could have dozens of names, which makes searching for postings harder. For example, someone who sends conservation information to the public on behalf of a non-profit organization could be called a Communications and Digital Media Specialist, a Marketing Consultant, a Public Engagement Officer or even a Fundraising Campaign Manager.

Explore the resources available on YouTube
There are so many resources available, and when you find the right channel people will talk about their successes, but they will often be very honest about their challenges too. You can learn a lot about personal process, values and the many potential paths to reach your goal. Ex. You are interested in being a self-employed organic farmer in the future. You are very keen on growing vegetables. After a few months of learning about other farms, you might decide that you would like to learn how to add workshops, cut flower sales, or eco-tourism to your future farm operation.

Take a short course
There are many courses that are free or very affordable online. You can take a few months over the summer to learn about an interest. Even if you decide in the end that it is not the right fit for you, you will still be better for having more skills and knowledge.

Reflecting on Green Jobs

1. Answer one of the following questions:
a) What environmental issue would you like to solve and how would you solve it?
b) How do you enjoy spending your time (interests, hobbies, etc.)? What do you like about them?
c) What do you want out of a career? What do you want your life to look like?
d) What types of careers wouldn't you see yourself doing? Why?

Question: _____

2. Through the activities in this learning package, you were often asked what aspects you liked or disliked about certain jobs. In your opinion, what kind of skills or competencies would be associated with the aspects you liked? Disliked? How do you think you would be able to develop these skills?

3. Think back about what you initially thought 'green jobs' were. How has your view changed? Have you discovered jobs that you were not aware of?

4. Do you think you could possibly have a green job in the future? What would it be? What are the next steps in getting closer to that goal?

Create a portfolio with your answers on myBlueprint! MyBlueprint is an application that supports students' education as well as career exploration and planning with a one-stop individual pathway planner. Learn more here: https://myblueprint.ca/

45 Minutes

BUILDING RELATIONSHIPS FOR CLIMATE ACTION

Conservation Corps Newfoundland and Labrador

As we begin to see the value, and ultimately, the urgency of taking climate action within our communities, and as we find our place in our world, it will become increasingly important to identify who we can connect with to find climate solutions. We should begin by considering how to effectively build relationships with people. The model below demonstrates a step by step approach you can use.

YouCAN! Youth Climate Action Now | TuPEUX! Action jeunesse pour le climat

climatechange education centre

BUILDING RELATIONSHIPS FOR CLIMATE ACTION

Take some time and reflect on your personal values, feelings about climate action and the community of others that could be interested in working together for change. What occupies your thoughts about the climate crisis and where can you apply your unique perspective to help? Consider the questions and suggestions below to get you on the path to take climate action!

WHAT MOTIVATES YOU?

Make a list of the things in your community that matter most to you, your friends, and your family.

WHAT NEEDS TO BE DONE?

Write, sketch or voice record your thoughts on what the issue is and how you believe it can be solved.

WHO CAN HELP? WHO NEEDS YOU?

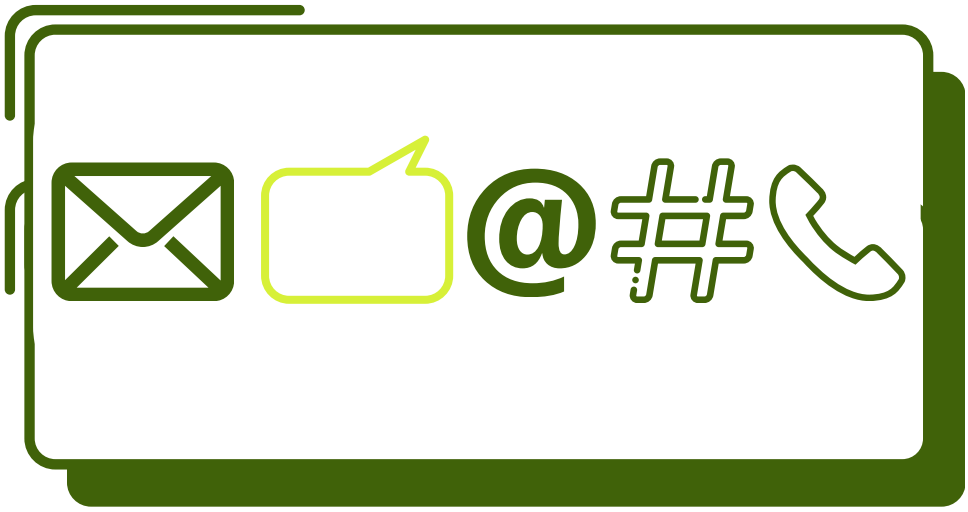
You are not alone. Many people think like you, and need your talents! It is incredible once you start looking,

MAKE A LIST OF CONTACTS

Search for local and national environment an climate action groups. Or use this CCNL's **Networking for Change** document. Look for phone numbers, email addresses and social media handles.

REACH OUT AND PREPARE

Reach out via all methods and be persistent, but respectful of others time. Prepare answers to questions the organization might have for you about your time, interests, skills, purpose and things you want to achieve. List and record your contact dates and add notes.



SHOW UP AND SEE YOUR INITIATIVE THROUGH!

Make a plan for how you will commit to your action. Set goals. Record and celebrate your progress. What's does this action inspire you to do next?

AND ALWAYS:

CONTINUE TO BUILD YOUR RELATIONSHIP WITH NATURE

Take the time to get outside and observe the wonder and beauty all around you. This reminds you of the things you are passionate about, and encourages you to keep building on your actions!