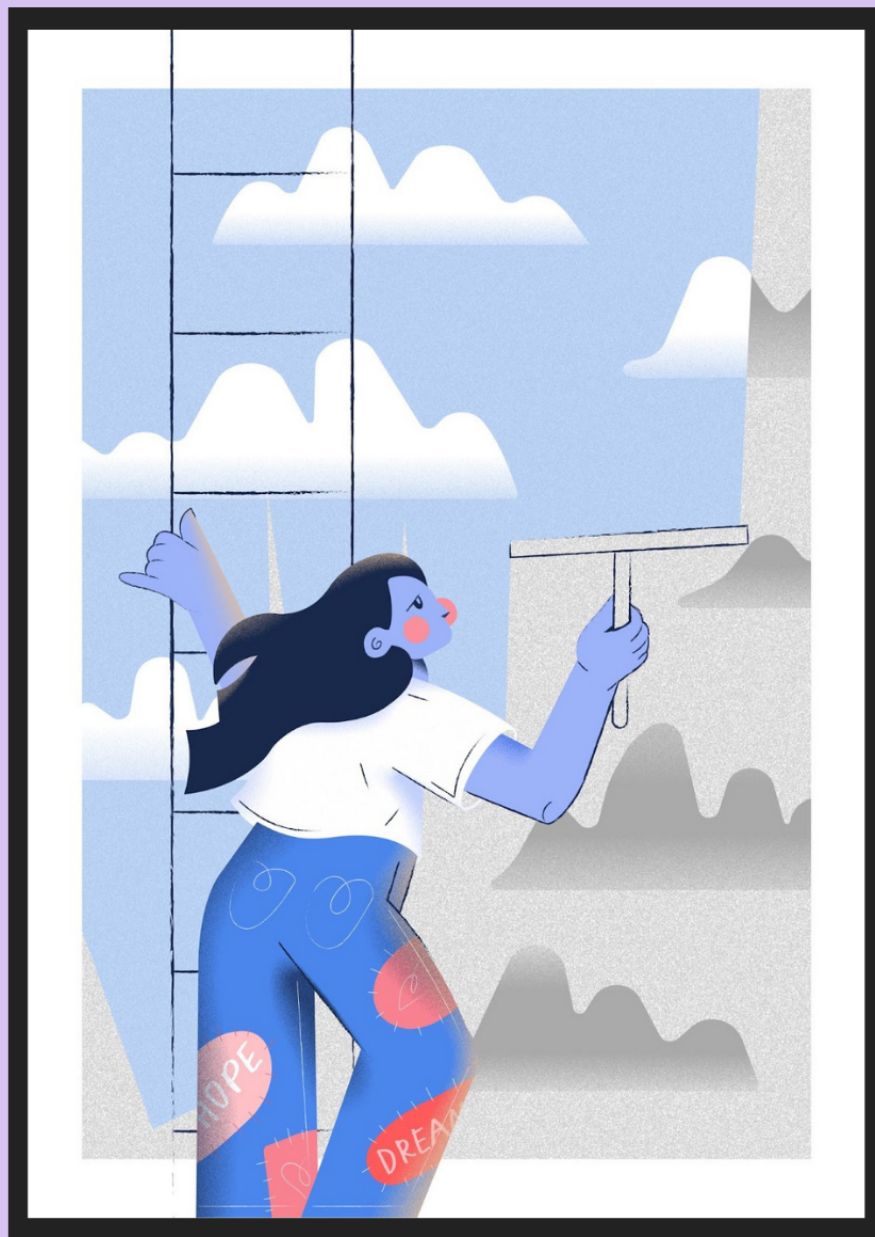


CHAPTER 4:

It's Easy Being Green!

*A Project of Learning for a Sustainable Future
Contributors: Janice Haines, Nathalie Lauriault*



Art by Laura Valdés
González for
ArtistsForClimate.org

A project of



Learning for a
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Chapter 4. It's Easy Being Green

This chapter explores green energy, the difference between “needs” and “wants” as well as the importance of becoming a climate champion.



Artwork by: Laura Valdés González for ArtistsForClimate.org

Background information: What do educators need to know?

Ripple Effect of Individual Actions

According to Canada’s Institute for Climate Choices, personal changes in behaviour will play a key role in reaching Canada’s net-zero goal. The question that often comes up is *how can one person’s actions have an impact on a problem as large as climate change?*

Behavioural Psychologist Kelly Fielding from the University of Queensland explains, "people are very influenced by what others do, even though we don't think we are". "It's a paradox. We think we make our own decisions, but the truth is we look to others for guidance about how we should behave. When it comes to climate change, the problem is that we just aren't getting the cues we need from our friends and families or, for that matter, from government and business." This is

what makes individual actions so important: it's less about our actions themselves and more about growing our impact by guiding others to follow suit ([Justin Rowlett, BBC, 2019](#)).

Climate change isn't going to *happen or not happen*—it is happening!—but it's up to the government, corporations, and, yes, individuals to determine just how much the climate will change and what impacts will be felt. As Greta Thurnberg says about taking individual action: “We do it because we want to influence the people around us, we want to send a clear signal that we are facing an emergency and when you are in an emergency you change your behavior” ([Green Matters, 2022](#)).

Consumer Choice

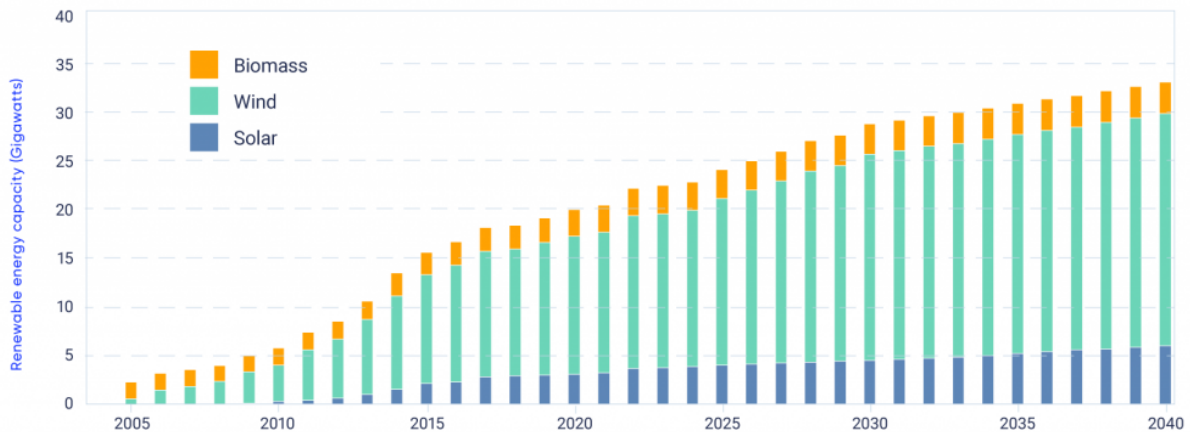
Every day we make choices about what is a necessity vs. a luxury (need vs. want) in our lives. These consumer choices have a big impact on the planet. To keep us fed, clothed, sheltered, and entertained, the earth's resources are being consumed faster than they can be replenished. This is related to humans' overconsumption, but also the linear nature of our economy. A linear economy means the raw materials that were used to make a product are thrown out at the end of its use, and thus become waste. A circular economy, on the other hand, reduces or eliminates waste by recycling and re-introducing used materials back into production, and materials/services are produced with sustainability, longevity, and repairability in mind.

In Canada, many goods and services are consumed without considering the environmental impact. For instance, according to a recent report by [Second Harvest](#), 58% of all food produced in Canada is thrown away. Additionally, according to [Elisa Tonda](#) (Head of the Consumption and Production Unit at the UN Environment Programme), fast fashion and irresponsible purchasing of clothing are large contributors to the climate crisis; apparel and footwear industries account for more than 8% of global climate impacts.

While we can work to make our economy more circular, while it remains primarily linear, we need to examine our consumption habits to reduce our waste and impact on the earth.

Green Energy

Globally, the energy sector accounts for over 70% of all greenhouse gas emissions attributed to humans ([Our World in Data](#)). To significantly reduce these emissions, humans need to not only reduce their overall energy use but also transition to cleaner and greener energy sources. “Climate change also has direct and indirect impacts on energy demand. Warmer winters reduce fossil fuel and electricity demand for heating (Mantle314, 2019), while the increasing number of hot days in summer increase electricity demand for cooling (Ortiz et al., 2018; Jaglom et al., 2014).” ([NRCAN, 7.6.1](#))



Observed and projected changes in non-hydro renewable energy capacity in Canada between 2005 and 2040 under the National Energy Board reference case scenario. Higher rates of growth are projected under a technology scenario (NEB, 2018).

Source: [NRCAN Chapter 7](#): Adapted from National Energy Board, 2018.

There is some confusion among the terms “clean,” “green” and “renewable” energy. **Clean energy** is energy gained from sources that do not release air pollutants, while **green energy** is simply energy that is derived from natural sources, and “renewable energy is energy derived from natural processes that are replenished at a rate that is equal to or faster than the rate at which they are consumed” ([TWI, 2022](#)). Renewable energy includes energy generated from many different natural resources or processes including solar, wind, hydropower, tidal power, geothermal, solid biomass, biogas, and liquid biofuels ([NRCAN, 2017](#)). While most green energy sources are renewable, some renewable energy sources may be greener than others. For example, a hydropower dam is clean because it releases no air pollutants, and it is renewable because the source of energy replenishes itself, but it is not green because dams and reservoirs that produce electricity are a large contributor to GHG emissions ([WaterKeeper Alliance, 2017](#)). Understanding the difference between these energy sources is important when discussing the environmental implications of energy use, and sustainable alternatives.

This chart below compares the tradeoffs of various energy sources:

Comparing Energy Sources

Explore the table to see the tradeoffs of different sources.

SOURCE OF ENERGY	FOSSIL FUEL	ALTERNATIVE	RENEWABLE	EMISSIONS	LAND USE
Biomass	✗	✓	✓		
Coal	✓	✗	✗		
Hydro	✗	✓	✓*		
Natural gas	✓	✗	✗		
Nuclear	✗	✓	✗		
Petroleum	✓	✗	✗		
Solar	✗	✓	✓		
Wind	✗	✓	✓		

*Because hydropower plants can significantly damage the ecosystems where they are built, hydropower is not always classified as renewable energy.



Source: [World 101: What is Climate Change](#)

In Canada, the goal is to reach net-zero emissions before 2030 ([Government of Canada, 2020](#)). However, the path to zero emissions will be challenging and complex. Varying solutions will likely be key parts of achieving this goal, including improving energy efficiency, shifting to non-emitting electricity, adopting heat pumps, and switching to electric vehicles ([Canadian Institute for Climate Choices, p4, 2021](#)).

“It is easy to be green!” explores climate change with K-2 students by learning about the importance of individual choices in the context of living sustainably. The inquiries focus on green energy, needs vs. want, and finally how these choices can ripple out to have a greater impact. Each of the 3 inquiries begins with a provocation followed by numerous strategies and examples. These steps can be completed in their entirety as stated. However, as inquiry is an organic and fluid process based on student input, educators may wish to adapt, modify or replace the suggested steps to create their own inquiry with their class. We, therefore, suggest that teachers review the whole chapter first to create a plan that will work best with their particular group of learners.

The following 3 inquiries are connected to curricular concepts as shown in this chart. These curricular concepts are applicable across Canada.

Curricular Connections	Concepts
Science	Stewardship Ecosystems Environment Biodiversity Sustainability Protection Habitats Innovation Change Survival Action Conservation
Language	Communication Inferencing Retelling Visual literacy Media forms Persuasion Point of view Critical Literacy
Social Studies	Resources Perspectives Consequences Interrelationships Cause Significance Human-environmental interaction Physical features Rights and responsibilities Scarcity Choice Supply and demand
Physical Education and Health and Wellness	Decision-making Contribution Connection Relationships Self awareness Balance Choice Peer pressure Self-determination Leadership Participation
	Composition

The Arts	Symbolism Interpretation Relationships
Math	Scale Shapes Location Investment Organisation

Prior to Provocations: Journaling

Encourage students to record their thinking and learning throughout the learning process. The main reason for developing a journal is for students to then be able to look back and track their growth and progression with their connection to climate change. Students scaffold their thinking throughout their learning journey. The entries can be a combination of personal reflections and assigned reflections. This can be done as illustrations, concept maps or written reflections.

Inquiry 1: Green Me- Needs vs. Wants

What do children need to survive and live a healthy, happy life? The activities in this inquiry help students distinguish the difference between the things they want and the things they need.

Resources:

- [Wall-E Read along Storybook](#)
- [Wall-E Movie](#)
- [Needs or wants? That is the question! - Bank of Canada Museum.](#)

Inquiry 2: Understanding Green Energy

Students will explore innovations in alternative energy, learn how they function and understand their benefits. They will explore their environment and understand how changes can be put in place to improve the energy system. Students will then create a machine that can help the environment. They will be given choices and encouraged to design and build their prototype.

Resources:

Poster:

- [Engage Your Students - Project Learning Tree](#)

Videos:

- [100% Renewable Energy](#)

- [Worlds Largest Lesson - Emma Watson Introduction | Global Goals](#)
- [5 inventions changing the world! | Explore | Awesome Activities & Fun Facts | CBC Kids](#)
[11 Kid Inventors Break Down Their Greatest Inventions | The New Yorker](#)
[Engineering Design Kindergarten Science](#)
- [Seed Launching Backpack, a 3D-printed, pollinator-friendly invention | The Kid Should See This](#)

Worksheets:

- [Alternative Energy Pictures](#)
- [Invention/Design Idea](#)

Website:

- [Schools — Canadian Multicultural Inventors Museum](#)

Inquiry 3: “I Want to be Green!”- Climate Champions

How to get students thinking about being “green”. Students will explore how a simple act can have a ripple effect and change and help their world.

Resources:

- [Sesame Street: It's Not Easy Being Green \(Kermit's Song\)](#)
- [Kermit the Frog - It's Not Easy Being Green Lyrics](#)

Books:

- [Teach kids sustainability: What Does it Mean to be Green?](#)
- [What Matters - By Alison Hughes](#)
- [I AM ONE \(A Book Of Action\) Read Aloud For KIDS](#)

Chapter 4: It's Easy Being Green!

Inquiry 1: Green me - Wants and Needs

- < **Provocations** – Picture
- < **Question Generation** – Five Whys
- < **Knowledge Building** – Knowledge Building Circle, Critical Thinking Question
- < **Determining Understanding** - Story, Simulation, Books, Videos
- < **Pursuing Learning** – Simulation Game, Needs and Wants Game
- < **Consolidation** – State Elaborate Example Illustrate (SEEI)
- < **Assessment** – I Used to Think... Now I Think... Exit Ticket
- < **Take Action**



A. Provocation:

To hook student interest, introduce the provocation to initiate students' thinking about needs vs wants.

Picture



(Source: Pixabay)

After viewing the picture. Invite students to give the image a title. Display the titles around the image. Then, as a group, invite students to explain why they chose this title for the poster.



B. Question Generation

At this point in the inquiry, we want to harness students' curiosity and build off of the provocation by generating meaningful questions to continue to drive the learning process.

Use the [Five-Why's](#) by looking at the picture. This strategy helps students deepen their ideas and understanding.

Possible questions:

- Why do people throw things away?
- Why is there a tractor there?
- Why doesn't garbage disappear when buried?
- Why is there garbage in this beautiful field?
- Why does this hurt the climate?



C. Knowledge Building

At this stage, students may be ready to engage in a group knowledge building activity. It will encourage students to open their minds to many alternative ways of thinking about the provocation and ideas that have been generated thus far in the inquiry process.

Engage in a class [Knowledge Building Circles -kindergarten](#) (outside if possible)

Use one of the questions that you generated after the picture activity to do a Knowledge Building Circle.

Possible [Critical Thinking Question](#):

- What can we do to reduce the amount of garbage?



D. Determining Understanding

At this stage of the inquiry, use responses to inform and guide the learning process. They can provide insight into which concepts need clarity, what students are already well informed about, and a general direction that students want to pursue. After the knowledge building circle, simulate a situation to understand the difference between needs and wants.

Simulation

Begin the activity by sharing the book [WALL-E](#)

“When a loveable, lonely robot named WALL•E falls in love with a sophisticated female robot named EVE, he follows his heart all the way into outer space! Young fans will enjoy this Little Golden Book retelling of Disney/Pixar’s WALL•E” ([WALL-E, RH Disney](#)).

OR

Explain that we have created too much garbage and polluted our water so in order to survive, we need to leave planet earth and find another planet. The problem is that we only have one rocketship so we are only allowed to bring 12 things with us.

Have a discussion about our needs and wants and how they can be influenced by our lived experiences and context. This will help students understand that they are similar and different to others. (i.e., both students might want an iPad but one student can’t get one because they don’t have internet, one student might want a new pair of shoes but another student may need a new pair of shoes because theirs are too small)

In pairs, invite the students to look around the classroom and collect 12 things they will need or want to bring on the journey to the new planet.

Possible questions:

- Why do you think this item is important?
- Could you sort the items in order from most important to least important or are they all the same?
- How will this item help you on your journey?

EXTENSIONS:

- **Watch:** [WALL-E’s “Day At Work”](#) (clip)
- **Watch:** [TALKING AND PLAYING WITH MOVIES: WALL-E](#) (study of human impact on earth)

**Note: The movie is approximately 1 hour and 40 min. You will need to show it in smaller sections to keep the students interested.

These books also speak to needs/wants and how they can be different based on our lived experiences:

- [Those Shoes](#) by [Maribeth Boelts](#), illustrated by [Noah Z. Jones](#):
“All Jeremy wants is a pair of those shoes, the ones everyone at school seems to be wearing. Though Jeremy’s grandma says they don’t have room for “want,” just “need,” when his old shoes fall apart at school, he is more determined than ever to have those shoes, even a thrift-shop pair that are much too small. But sore feet aren’t much fun, and Jeremy soon sees that the things he has — warm boots, a loving grandma, and the chance to help a friend — are worth more than the things he wants.” ([Those Shoes](#): Boelts, Maribeth, Penguin Random House)
- [A Bike like Sergio’s](#) by [Maribeth Boelts](#), illustrated by [Noah Z. Jones](#):

A story about Ruben, who is faced with a difficult choice, and an opportunity to do the right thing when he comes upon a surprise \$100 bill. ([Scholastic](#), A Bike Like Sergio’s)



E. Pursuing Learning

At this stage, students may begin research to pursue their questions, or the following activity could be integrated into the process to ensure that students

have an understanding of foundational climate science.

Game

The game below provides students with deliberate and focused opportunities to continue learning about climate change impacts and responses to needs and wants.

Continue the discussion about needs and wants.

1. Inform the students that more people are coming on the rocketship so 6 more items need to be eliminated.
2. With their partner, discuss the reason for keeping those 6 items.
3. Keep telling each pair that they have to eliminate items until they are allowed only one.
4. Discuss and present the reason that they chose that one item with the rest of the class.
5. Display all of the items chosen by the pairs and give each student two post-its with their name on it.
6. Students then place their post it notes beside the two items that they feel are the most important items to bring on the voyage.
7. Reflect on why some items seem to be more important than others.

End the lesson by explaining that they don't have to go on the rocket, but that they should stay here, take care of the planet and make it a more sustainable place for future generations.

Next, play the game [Needs or wants? That is the question! - Bank of Canada Museum](#) to help them solidify their understanding of climate change.

Extension Videos:

- **Needs and Wants for Kids**: A basic description of the differences between needs and wants.
- **Needs vs Wants**: Learn the difference, when it comes to economics, between your needs and your wants.
- **Need vs Want**: Understand how paying attention to your needs helps you work towards your wants.



F. Consolidation

This step is designed to encourage students to integrate and synthesize key ideas. When students make connections and see relationships within and across lessons, it helps them to solidify knowledge and deepen their understanding.

[SEE-I](#) Strategy

- **S- State it**: with the class clearly state and copy the definition of the concepts onto the board. Needs “a need is something you must have to survive” and wants “something that’s nice to have, but you can actually live without”. ([Teaching kids the difference between needs and wants | ASB Blog](#))
- **E- Elaborate**: the student reformulates the definition in his own words.

- **E- Example:** the student gives their own examples of need and want.
- **I- Illustrate:** the student illustrates in a non-linguistic way the image he has for the need and the want.

More experienced students might also be able to find an illustration or even a symbol that makes them think of the concept.

Invite students to share their illustration/symbol together.



Assessment Idea

Teachers will use multiple methods to assess learning at various stages. The following method represents an alternative to the usual tests and can be used after the consolidation stage or at any other time during the lesson to check the level of comprehension of the pupils.

Exit Ticket

Use the [I Used to Think... Now I Think...](#) strategy as your exit ticket.

Have students write one sentence explaining how their thinking about needs and wants have changed (with a personal example) as a result of this inquiry. For younger students, this can be done with the teacher writing down their thoughts after they share them or illustrate them.



Take Action

Allowing time for students to take action is an essential part of the learning process on climate change, as it empowers students and eases their eco anxiety. These ideas for action can be utilized at any point in the learning process, whether it's now or after completing more guided inquiries. Please note that the suggestions are consistent in each chapter.

You might introduce the idea of students taking action by sharing the following YouTube ["Climate Change Song"](#)

Ask the students what they want to do to positively impact climate change in their local community. List their ideas and come up with a plan to put their action in place.

Action can be taken in many different ways, these are some possible Ideas for Taking Action:

- Model green behaviour - use a reusable water bottle, actively recycle, compost, bring your bags to the grocer, bring your mug to the coffee shop, repair things that need mending, buy second-hand when applicable, pack a litterless lunch, use cloth

napkins, use toxic-free cleaners (or make your own), walk or bike instead of driving when possible - these are just some basic ideas. Check out [Ideas to Think Green](#) for more suggestions.

- Collect rainwater for the garden
- Compost your kitchen waste
- Try more plant-based foods
- Enrol in the EcoSchools program The core of the EcoSchools program is the EcoSchools Certification Application (ECA), our bilingual, online application platform that enables schools across the country to create and implement a customized environmental action plan that meets the needs of their community. At the end of each year, school plans are submitted and assessed by EcoSchools staff, and schools are awarded a certification level ranging from Bronze to Platinum.
- Do some of the [Eco-Activities | Earth Rangers: Where kids go to save animals!](#) to reduce our impact on the environment
- Develop a plan to conserve energy at home and/or at school and communicate this to this to the rest of the student body
- Enter one of the Little Inventors Climate Champions invention challenges offered by the Child Rights International Network. At [Little Inventors Events](#) you can find current, past and upcoming events such as Climate Champion Inventions and Protect Our Oceans Mission. It's worth exploring prior contests so students can see what other students across the globe have designed.
- The Little Inventors site (<https://www.littleinventors.org/>) also provides a variety of mini challenges under the heading "Challenges" with many related to the environment and climate change. Students can upload their creation to the site and hope it gets published and/or complete to share with the class or upload to a class' shared Google document. Here are some relevant mini challenges:
 - [Challenge to Protect Nature](#)
 - [Invention to Protect Trees & Wildlife](#)
 - [Make Sustainable Energy Through Exercise](#)
 - [Invention to Waste Less Food](#)

Action Project Examples

“BABY BITES FOR SUSTAINABLE FOOD PRODUCTION”- Sydney Academy- ON (2021)
K-6

- This class learned about the impacts food production has on our planet and the limited food production of fresh produce in their region. Each student was provided with the materials needed to grow a tomato plant and some herbs. The students were asked to take it home with a plan to care for it and have a harvest in their homes over the summer. [See their project here.](#)

“CLOTHING SWAP AND CLOTHING INDUSTRY POLLUTION”- Port Elgin Regional School- NB (2021) K-1

- This class did an action project of a clothing swap to try to help reduce, reuse and recycle. They also did some research to see what materials are best for

the earth. They want to encourage others to do clothing swaps and try to reduce the amount of clothing everyone uses. [See their project here.](#)

“SUSTAINABILITY AT HOME CHALLENGE”-St. Mary Catholic Elementary School-ON (2021) AGE

- The teachers at St Mary developed an educational program to deliver to students virtually through their classroom teachers that involved a presentation, supporting activities and an at-home challenge. The goal was to have students submit photos, videos, drawings and written descriptions of the things they were doing at home to live more sustainably. As a result of participation all students will receive a St. Mary Grafton reusable water bottle to use at home or at school. [See their project here.](#)

*How could you use these great examples to come up with action projects with your K-2 students?

Earth Rangers Examples:

- [Eco-Activity #187: Snack like a Rabbit! | Earth Rangers: Where kids go to save animals!](#)
- [Eco-Activity: Make a difference with just ONE tree! | Earth Rangers: Where kids go to save animals!](#)
- [Eco-Activity: Eliminate energy-wasters in your home | Earth Rangers: Where kids go to save animals](#)

[National GOOS paper Day](#)

- **GOOS stands for Good On One Side.** GOOS paper is paper that has been used on one side, but is still blank and usable on the other side. Using GOOS paper means ensuring both sides of a piece of paper are used before it is recycled.
- A GOOS paper bin collects and stores your GOOS paper in a convenient and accessible place to help ensure it can be used easily. Get creative and decorate your GOOS bins with a “goose” theme or other eye-catching styles.
- Join students, teachers, workplaces, and families across the country on the **first Thursday in April** to celebrate National GOOS Paper Day.
- On this day of action, get creative as you learn about responsible paper use and promote effective ways to reduce, reuse, and recycle paper.

[The \[Roberta\] Bondar Challenge](#)

- Dr. Roberta Bondar is unique, not just for being the world’s first neurologist in space, the first Canadian woman in space, or for her pioneering space medicine research. Academically one of the most distinguished astronauts to have flown in space, Dr. Bondar is also the only astronaut to use fine art photography to explore and reveal Earth’s natural environment from the surface.
- The Bondar Challenge is an opportunity for students to learn about the art of photography and to discover new perspectives on nature through a camera lens. The challenge is designed for students aged 6-18. Student entries will be judged in one of

three age categories: 6-10; 11-14; or 15-18.

[Bullfrog Power Community Projects](#)

- Activists and organizers across the country are working to transition their communities away from fossil fuels. We created our community-based green energy project grants to provide critical funding for these local efforts.
- All bullfrog powered customers help fund these small-scale, community-led projects, including solar panels on schools and in Indigenous communities, education and training programs, and a cleantech accelerator.
- Some examples of education-related initiatives, including Canadian Rockies Public School solar project can be found at the link above.

Chapter 4: It's Easy Being Green!

Inquiry 2: Understanding Green Energies

- < **Provocation** – Poster, New Vocabulary
- < **Question Generation** – Video, Pictures, New Vocabulary
- Knowledge Building** – Knowledge Building Circle
- < **Determining Understanding** - Plus Minus Interesting
- < **Pursuing Learning** – Videos, Invention/Design Process, Onomatopoeia
- < **Consolidation** – Inventors Museum
- < **Assessment** – Green your school
- < **Take Action**



A. Provocation

To hook student interest, introduce the provocation to initiate student's thinking about alternative energy.

Poster

Posters can be a great way of gaining student attention and interest. This [link](#) identifies the advantages to poster use in education and suggests 6 attributes of an effective poster.

Suggestion: Put the image up on the whiteboard and have the students circle things that they notice.



[Engage Your Students - Project Learning Tree](#)

Possible Questions:

- What do you notice about the school?
- Is this school different from our school?
- Why is the name of the school "Green School"?
- Why is the sun, wind, water and earth used to create an alternative energy?

**Begin to introduce new vocabulary. (renewable/non-renewable, biomass (plants, wood, waste), solar power, wind energy, wave energy, geothermal energy, hydro power)



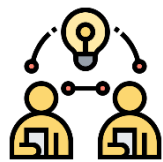
B. Question Generation

At this point in the inquiry, we want to harness students' curiosity and build off of the provocation that has captured their interest by generating meaningful questions to continue to drive the learning process.

Video

Play the video [100% Renewable Energy](#) and write any new vocabulary on the board with the accompanying [Alternative Energy Pictures](#).

What questions do your students have about the different types of renewable energies? Write them down.



C. Knowledge Building

At this stage, students may be ready to engage in a group knowledge building activity. It will encourage students to open their minds to many alternative ways of thinking about the provocation and ideas that have been generated thus far in the inquiry process.

Engage in a class [Knowledge Building Circles-kindergarten](#) (outside if possible)

Use one of the questions that you generated after the video to do a Knowledge Building Circle.

Possible [Umbrella Question](#):

- What alternative energy do you think is the best one to use? Why?



D. Determining Understanding

At this stage of the inquiry, use responses to inform and guide the learning process. They can provide insight into which concepts need clarity, what students are already well informed about, and a general direction that students want to pursue.

At this point in the inquiry you may decide to use a tool such as [PMI strategy](#) .

[How Can Plus Minus Interesting Strategy be Used in The Classroom?](#)

School Walk

Have students take a walk through and around their own school and share what they believe is a plus, minus or something interesting around energy use.

PLUS	MINUS	INTERESTING
List all of the positive ideas that you noticed about energy in and around your school.	List all of the negative ideas or problems that you noticed about energy in and around your school.	List all of the interesting ideas, neither positive or negative, that came from your walk through and around the school.

Draw, write or record your thoughts on an iPad or journal.



E. Pursuing Learning

At this stage, students may begin research to pursue a question that has been generated, or the following activity could be integrated into the process to ensure that students have an understanding of foundational climate science. The activities listed below will enrich the understanding of alternative energies and climate change.

Help students understand the importance of inventions and share examples of students who have already created inventions to help climate change.

Video

This [video](#) is for junior students, it is suggested that you stop it often to help the younger students identify the problems and solutions.

Invention

Inventors see a problem and try to come up with a solution. Inventions can also make the world a better place. Use the video [Engineering Design Kindergarten Science](#) (Ask, Learn More, Create, Improve) to encourage students to design and construct something that will help with energy and climate change. Have older students label their [Invention/Design Idea](#).

After they have illustrated their design, they can create a prototype (simple model based on a design). This prototype can be made from any material they choose (e.g., playdough, clay, pipe cleaners, recycled materials).

These challenges are taken from or adapted from [Little Inventors](#).

- Choose three to five that you like and give the students a choice.
- Invent a machine to reduce the amount of electricity we use.
- Invent a new way to travel that uses less energy.
- Invent a way to create energy through exercising.

- Invent clothing with an extra ability to save energy.
- Invent a new way to water a garden that saves energy.
- Invent a Superhero outfit that creates renewable energy.
- Invent a hat or shoes that have an ability to create energy.
- Invent a machine that stops plastic from going into the ocean.
- invent an eco-friendly city/home.
- Invent a robot that can help us waste less energy.
- Invent a bicycle that does more than just get us to a different destination.
- Come up with your own idea for an invention.

Drama

When you present your design to the class, use Onomatopoeia.

[The Onomatopoeia Alphabet | Onomatopoeia for Kids | Jack Hartmann](#) .

Come up with at least 5 sounds that your invention makes.

Possible Extensions:

- [Seed Launching Backpack, a 3D-printed, pollinator-friendly invention | The Kid Should See This](#) (video example)
 - What problem did he notice? What was his solution?
 - What are the pros and cons of this invention?
- [11 Kid Inventors Break Down Their Greatest Inventions | The New Yorker](#)



F. Consolidation

This step is designed to encourage students to integrate and synthesize key ideas. When students make connections and see relationships within and across lessons, it helps them to solidify knowledge and deepen their understanding.

Create an Inventors Museum

Invite another classroom to come to your Inventors Museum.

- Option 1: Each group will have to explain their invention and how it works to the different groups of students.
- Option 2: Each group will try to sell it to another class. They will need to explain why it is important for climate change and why they should buy it.

[Schools — Canadian Multicultural Inventors Museum](#)



Assessment Idea

Teachers will assess learning at different points throughout the inquiry using multiple methods. The following assessment provides an alternative evaluation method to standard quizzes and tests, that can be used after consolidation or at any point in the lesson to check for understanding.

Create Your Own “Green School”

Provide a picture of your school to each pair of students or small group in your class. Each group can add changes to the school that they believe will make the school “greener” and help with climate change. Have them present their thinking to the principal /superintendent /custodians or any other stakeholders.



Take Action

Allowing time for students to take action is an essential part of the learning process on climate change, as it empowers students and eases their eco anxiety.

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You might introduce the idea of students taking action by sharing the following YouTube [“Climate Change Song”](#):

If they need some ideas of simple and immediate measures they can implement you can share this document from Direct Energy. While it is written for parents, students can get the idea of something that would be attainable for themselves - or to share with their families! [Ideas to Think Green](#)

Ask the students what they want to do to positively impact climate change. List their ideas and come up with a plan to put their action in place.

Ideas for Taking Action:

- Model green behaviour - use a reusable water bottle, actively recycle, compost, bring your bags to the grocer, bring your mug to the coffee shop, repair things that need mending, buy second-hand when applicable, pack a litterless lunch, use cloth napkins, use toxic-free cleaners (or make your own), walk or bike instead of driving when possible - these are just some basic ideas. Check out [Ideas to Think Green](#) for more suggestions.
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Action Project Examples

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- This class did an action project of a clothing swap to try to help reduce, reuse and recycle. They also did some research to see what materials are best for the earth. They want to encourage others to do clothing swaps and try to reduce the amount of clothing everyone uses. [See their project here.](#)

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[Project 2050: Climate-friendly habits to change the world!](#)

- Welcome to **Project 2050: Climate-friendly habits to change the world!** This national movement, powered by [Earth Rangers](#) in partnership with EcoSchools Canada, is about connecting youth with the knowledge and skills needed to tackle climate change.
- The program will provide an easy and fun way for youth and their families to contribute to the fight against climate change by adopting small but impactful climate-friendly habits.

[Eco-Activity: Make a difference with just ONE tree! | Earth Rangers: Where kids go to save animals!](#)

[Eco-Activity: Eliminate energy-wasters in your home | Earth Rangers: Where kids go to save animals](#)

[Bullfrog Power Community Projects](#)

- Activists and organizers across the country are working to transition their communities away from fossil fuels. We created our community-based green energy project grants to provide critical funding for these local efforts.
- All bullfrog powered customers help fund these small-scale, community-led projects, including solar panels on schools and in Indigenous communities, education and training programs, and a cleantech accelerator.
- Some examples of education-related initiatives, including Canadian Rockies Public School solar project can be found at the link above.

Chapter 4: It's Easy Being Green!

Inquiry 3: I Want to Be Green! - Climate champions

- < **Provocations** – Song, Lyrics
- < **Question Generation** – Five Ws and an H and developing higher order questions
- < **Knowledge Building** – Doodling and Sketching
- < **Determining Understanding** - If....Then..... Book
- < **Pursuing Learning** – Experiment, Book, Create a book
- < **Consolidation** - Making Seedbombs
- < **Assessment** – Create a Video
- < **Take Action**



A. Provocation

To hook student interest and get them thinking, introduce a provocation to get them thinking about what it means to be green.

Song

Have the students listen to the song [Sesame Street: It's Not Easy Being Green \(Kermit's Song\)](#) Muppets - Kermit - It's not easy being green (original)

Either share the [Kermit the Frog - It's Not Easy Being Green Lyrics](#) on overhead projector or write the lyrics out on large poster paper.

***Students are very literal at this age. This helps them understand that the song can be interpreted many ways and introduces the concept of “being green”.**

Possible Questions:

- What message is Kermit trying to say?
- What do you think Kermit means by “It’s Not Easy Being Green”? Is he right?
- After listening to the song, do you think you would like to be “green”? Why?



B. Question Generation

At this point in the inquiry, we want to harness students’ curiosity and build off of the provocation by generating meaningful questions to continue to drive the learning process. Below are some suggestions for guiding students in creating questions that will drive their inquiry on their understanding of being “green” and being climate champions.

Kermit doesn’t want to be green at the beginning of the song but changes his mind at the end.

Use [Five Ws and an H and developing higher order questions](#) (Who, What, Where, When, Why and How) to get the students thinking about being green.

Example:

- Who can be “green”?
- What does it mean to be “green”?
- Where are “green” people?
- When is a good time to be “green”?
- Why would you want to be “green”?
- How do I start to be “green”?



C. Knowledge Building

At this stage, students may be ready to engage in a knowledge building activity. It will encourage students to open their minds to many alternative ways of thinking about the provocation and ideas that have been generated thus far in the inquiry process.

Sketch Map

Engage students in the [Doodling and sketching](#) strategy. The purpose of this strategy is to begin to understand what “green” means to them. Have them work on their own, in pairs or as a class to sketch some of their ideas. They can add to their sketch or the group sketch throughout the inquiry.

Possible questions:

- What does it mean to be green?
- Is it easy being green?



D. Determining Understanding

At this stage of the inquiry, use responses to inform and guide the learning process. They can provide insight into which concepts need clarity, what students are already well informed about, and a general direction that students want to pursue.

After spending some time learning about being “green”, share this book and reflect on their understanding to determine next steps.

Book

Teach kids sustainability: [What Does it Mean to be Green?](#) By: [Rana Diorio](#), illustrated by [Chris Blair](#)

“In this empowering book, a young boy and girl discover amazing facts (like how our food travels an average of 1,500 miles to be on our plate!) and explore all the different ways they—and we—can help protect the Earth’s most precious resources to save the planet and live “green” lifestyles.”
(Rana Diorio)

As a class, come up with several IF- THEN statements about what it means to be “green”. Write their statements on poster paper and decorate them. Have the students decide where each of the statements should be put in the classroom or in the school to remind everyone of the importance of being “green”.

Example:

If we use the bottle filling station **then** we save water. The students may decide to put this above the bottle filling station in the school hall.



E. Pursuing Learning

At this stage, students may begin research to pursue a question that has been generated, or the following activity could be integrated into the process to ensure that students have an understanding of foundational climate science. The activity listed below will enrich the understanding of being green and becoming climate champions.

Book

Read: [What Matters](#) By [Alison Hughes](#), illustrated by [Holly Hatam](#) find the read along version [here!](#)

“What happens when one small boy picks up one small piece of litter? He doesn't know it, but his tiny act has big consequences. From the miniscule to the universal, What Matters sensitively explores nature’s connections and traces the ripple effects of one child’s good deed to show how we can all make a big difference.”(Alison Huges)

AND

Read: [I AM ONE- A Book Of Action!](#) By [Susan Verde](#), illustrated by [Peter H. Reynolds](#) by “One seed to start a garden, one note to start a melody, one brick to start breaking down walls: Every movement and moment of change starts with purpose, with intention, with one. With me. With you.” Peter H Reynolds.

Experiment

Drop a rock in a pan of water so that the students can see the ripple effect. Ask the students what they notice. Explain that when a rock is thrown, there is a movement in the water that widens and expands. Like the rock, our actions and words can have far reaching effects.

Possible questions:

- What is the relationship between the boy and the ripple that the rock caused?

- Why is a tiny act important?
- What tiny act have you done that you think helped another species?

Climate Champions Book

Create a book together. Each child creates a page for their book illustrating an action they would like to take to become a climate champion. Decide on the title for your book.

Possible title: Climate Champions!



F. Consolidation

This step is designed to encourage students to integrate and synthesize key ideas. When students make connections and see relationships within and across lessons, it helps them to solidify knowledge and deepen their understanding.

There are many ways that we can help the earth, animals and people. Let's start to answer the question "Is it easy being green?" by creating something that will immediately help our environment and help stop climate change.

Seed Bombs

These [wildflower seed bombs](#) are made with local species and natural clay and are thrown into natural spaces anytime of the year. When Spring arrives and the rain washes away the clay, it leaves the wildflower seeds which will hopefully grow and encourage different insects and wildlife to the area. The students will start to understand another important and easy way to be "green" and how much we rely on pollinators.

Suggestion: focus on specific seeds so that you can help certain species in your area.
E.g., milkweed seeds for Monarch butterflies

**Have the students take pictures and short videos of the process so that they will be able to create and share their videos with other students.



Assessment Idea

Teachers will assess learning at different points throughout the inquiry using multiple methods. The following assessment provides an alternative evaluation method to standard quizzes and tests, that can be used after consolidation or at any point in the lesson to check for understanding.

[Student-Created Videos in the Classroom | Edutopia](#)

- *Learning product videos*
- *Response videos*
- *Reflection videos*
- *Tutorial videos*

Have the students create a video or take pictures and do a voice over to demonstrate their learning. The students show how they made seedballs, where they threw or want to throw them and what they hope will happen. They can finish the video by explaining why they think this will help the climate.



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"SUSTAINABILITY AT HOME CHALLENGE"-St. Mary Catholic Elementary School-ON (2021) AGE

- The teachers at St Mary developed an educational program to deliver to students virtually through their classroom teachers that involved a presentation, supporting activities and an at-home challenge. The goal was to have students submit photos, videos, drawings and written descriptions of the things they were doing at home to live more sustainably. As a result of participation all students will receive a St. Mary Grafton reusable water bottle to use at home or at school. [See their project here.](#)

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To participate **select and complete at least three** of the following actions to contribute to Project 2050:

- Active and Sustainable School Travel
- Divert Textile Waste
- Heating and Cooling
- Meatless Mondays
- Reduce Your Food Waste
- Sort Your Waste
- Switch Off Lights and Devices
- Tree Planting and Maintenance at School
- Vermicomposting and School-based Composting
- Waste-Free Lunch

[Eco-Activity: Collect and Conserve! | Earth Rangers: Where kids go to save animals!](#)

[National GOOS paper Day](#)

GOOS stands for Good On One Side. GOOS paper is paper that has been used on one side, but is still blank and usable on the other side. Using GOOS paper means ensuring both sides of a piece of paper are used before it is recycled.

A GOOS paper bin collects and stores your GOOS paper in a convenient and accessible place to help ensure it can be used easily. Get creative and decorate your GOOS bins with a “goose” theme or other eye-catching styles.

Join students, teachers, workplaces, and families across the country on the **first Thursday in April** to celebrate National GOOS Paper Day.

On this day of action, get creative as you learn about responsible paper use and promote effective ways to reduce, reuse, and recycle paper.

[The \[Roberta\] Bondar Challenge](#)

Dr. Roberta Bondar is unique, not just for being the world’s first neurologist in space, the first Canadian woman in space, or for her pioneering space medicine research. Academically one of the most distinguished astronauts to have flown in space, Dr. Bondar is also the only astronaut to use fine art photography to explore and reveal Earth’s natural environment from the surface.

The Bondar Challenge is an opportunity for students to learn about the art of photography and to discover new perspectives on nature through a camera lens. The challenge is designed for students aged 6-18. Student entries will be judged in one of three age categories: 6-10; 11-14; or 15-18.