

## Chapter 4: It's Easy Being Green!

### Inquiry 1: Understanding Green Energies

- < **Provocation** – Books
- < **Question Generation** – Think, Puzzle, Explore
- < **Knowledge Building** – Energy Audit, Books, Film
- < **Determining Understanding** - Plus Minus Interesting
- < **Pursuing Learning** – Notepad, Jamboard
- < **Consolidation** – Student Created Questions
- < **Assessment** – 5-3-1
- < **Take Action**

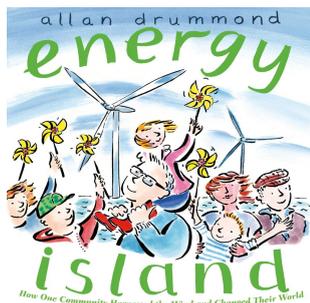


#### A. Provocation

To hook student interest, introduce the provocation to initiate student thinking.

#### Book

Using literature is a powerful tool to connect learners to an issue or idea. The book(s) identified here are suggested titles to introduce the concept and spark discussion on alternative energies.



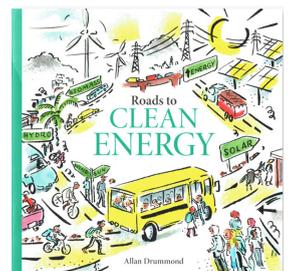
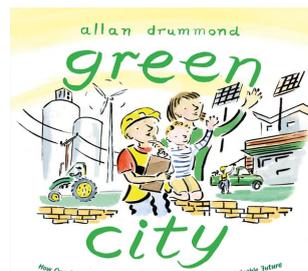
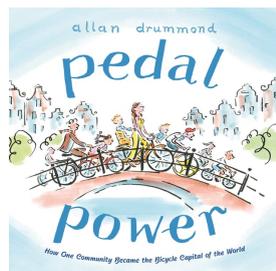
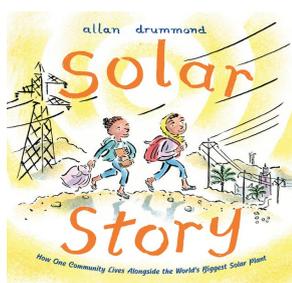
Book: [Energy Island: How One Community Harnessed the Wind and Changed their World](#) by Allan Drummond is a great place to begin.

“Hold onto your hats! It's windy on the Danish island of Samsø. Meet the environmentally friendly people who now proudly call their home Energy Island. At a time when most countries are producing ever-increasing amounts of CO<sub>2</sub>, the rather ordinary citizens of Samsø have accomplished something extraordinary—in just ten years they have reduced their carbon emissions by 140% and

become almost completely energy independent. A narrative tale and a science book in one, this inspiring true story proves that with a little hard work and a big idea, anyone can make a huge step toward energy conservation” (Allan Drummond, [Energy Island](#), 2015).

[Here](#) is a link to a reading of the story.

Check [Allan Drummond's website](#) for many other great selections such as:





## B. Question Generation

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At this point in the inquiry, we want to harness students' curiosity and build off of the provocations that have captured their interest by generating meaningful questions to continue to drive the learning process. This section will outline pathways for question generation depending on the provocation(s) that your class engaged with.

Use the [Think, Puzzle, Explore](#) strategy to aid students in generating ideas and continuing their inquiry journey.

### Example Activity:

There are many new terms introduced in this story. Begin with a word wall to ensure that all students have access to the new vocabulary.

Create a graffiti board (large butcher block paper on a wall) where students can post their questions and ideas. Divide the board into 3 sections and label them:

### Energy Island:

|  |                                    |  |
|--|------------------------------------|--|
| What do you think you know about this topic? | What puzzles you about this topic? | How might you explore what puzzles you (how might you find answers)? |
|--|------------------------------------|--|



## C. Knowledge Building

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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 provocations and ideas that have been generated thus far in the inquiry process.

Have students complete an Energy Audit either at home or at the school in each of the classrooms (or both), such as the one provided by Eco Schools Canada. This energy audit called [Switch Off Lights & Devices](#) is a fillable tracking sheet that identifies 3 areas to focus on: lights, computers & monitors and printers & photocopiers as well as a final column to add anything else students would like to monitor over a period of time (e.g., blinds closed when possible, no obstructions over vents). From the information collected, students can move to action to help promote and increase energy conservation personally and at the school.

Other alternative energies can be explored during this phase of the inquiry.

[The Boy Who Harnessed the Wind](#) by [William Kamkwamba](#) and [Bryan Mealer](#)

The story focuses on a Malawian boy named William (Maxwell Simba), who saves his town

from famine by constructing a windmill to provide water and electricity. The Boy Who Harnessed the Wind is **actually based on a remarkable true story**, bringing a wider audience into William Kamkwamba's incredible journey of innovation. This story is available as a [picture book \(in a .pdf version\)](#), a [Young Adult novel](#) and a [film on Netflix](#).

***[Iqbal and His Ingenious Idea: How a Science Project Helps One Family and the Planet](#)*** by [Elizabeth Suneby](#), illustrated by [Rebecca Green](#).

It's monsoon season in Bangladesh, which means Iqbal's mother must cook the family's meals indoors, over an open fire. The smoke from the fire makes breathing difficult for his mother and baby sister, and it's even making them sick. Hearing them coughing at night worries Iqbal. So when he learns that his school's upcoming science fair has the theme of sustainability, Iqbal comes up with the perfect idea for his entry: he'll design a stove that doesn't produce smoke! With help from his teacher, Iqbal learns all about solar energy cooking, which uses heat from the sun to cook --- ingenious!



## **D. Determining Understanding**

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

At this point in the inquiry you may decide to use a tool such as the [Plus Minus Interesting \(PMI\) Tool](#). Students are instructed to write down the positives, negatives and interesting features of a topic, question or situation, in this case green energy or climate change. Decide whether to do it in groups, individually or as a whole class approach.

For more information on the PMI strategy, check the strategy bank or check [here](#).



## **E. Pursuing Learning: Impacts and Green Opportunities**

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At this stage, students may begin research to pursue some of their questions, or some of the following activities 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.

Have students explore this website individually or in pairs: [NASA Climate Kids](#). On the main page of this site there are 5 topics: weather & climate, atmosphere, water, energy and plants & animals so you could choose to assign partners to one of these areas.

Using an app such as [Notepad](#) on their electronic device, or collectively using an electronic tool such as [Jamboard](#), record facts they find in their virtual travels that they learned, intrigued them or found interesting, in preparation for further exploration or in the consolidation phase of this inquiry when they generate questions for other students.



## F. Consolidation

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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.

### Student Created Questions

For this consolidation exercise, students will work in pairs. Each person will generate several thought-provoking summary questions for their partner. The questions should be based on the learning from this inquiry and could address their own personal gaps in understanding or aim to deepen understanding. Each partner will have an opportunity to write full responses to their questions, and then share their thinking with their partner.



## Assessment Idea

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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.

Use the [5-3-1](#) technique to assess their level of understanding to this point.

### Example Activity:

Pose a question about alternative energies that arose from this inquiry. Students work individually to generate 5 facts they've learned about the topic. Then, in pairs students work together to choose the best 3 answers from the 10 facts their combined list has generated. Finally, students join with another pair and collectively choose the best answer to the question from their combined lists.



## Take Action

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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. 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](#)

#### **Ideas for Taking Action:**

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- 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
- Conduct a clothing drive
- Collect food donations for the local food bank
- Enrol in the EcoSchools program and complete as many initiatives as the class decides. “The core of the EcoSchools program is the EcoSchools Certification Application (ECA), a 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.”
- Develop a plan to conserve energy at home and/or at school and communicate this to this to the rest of the student body. Take part in one of Green Learning’s Challenges like the “Energy Revealed Challenge” [here](#).
- 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**

### **[Earth Ranger’s Project 2050](#)**

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.

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

### **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 bullfrogpowered 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.

### [Young Reporters for the Environment](#) (For Grade 6 only):

YRE Canada is a national environmental education program that gives youth the opportunity to be part of the solution by producing creative and engaging environmental journalism. Participants (ages 11-14 and 15-18) investigate and report on environmental issues, and propose solutions, by using video, photography or writing.

YRE Canada is part of [Young Reporters for the Environment](#) – an international program by the [Foundation for Environmental Education \(FEE\)](#).

Each year there is a contest available to students with an April deadline. This Canadian National Competition is open to entrants in two categories: **ages 11-14**, and **ages 15-18**.

Article, photo, or video submissions must meet a few criteria. Pieces should:

- Investigate solutions to a local environmental issue/problem based on this year's themes of **pollution**, **loss of biodiversity**, or **climate change** that have to be linked to a chosen [Sustainable Development Goal \(SDG\)](#).
- Report on the chosen issue through writing, photos, or video.

Students may submit more than one piece and can work individually or in groups of up to three people. Please note, winners in each category and age group will be publicly displayed and promoted on EcoSchools Canada's social media and website.