Chapter 1: What Is Climate Change & Why Care?
Inquiry 1: Understanding Weather vs. Climate

- **Provocations** – *Book*
- **Question Generation** – *Q Chart*
- **Knowledge Building**– *Thinking Routines*
- **Determining Understanding** – *KWL*
- **Pursuing Learning** – *climate change science*
- **Consolidation –** *journal*
- **Assessment –** *RAFT strategy*
- **Take Action**

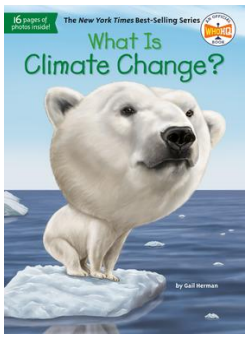
A. Provocation

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

Book:
The book identified here is one suggested title to introduce the concept and spark discussion on climate change, but there are numerous picture books and other literature that can be used for the same purpose. This link from Lakehead University's library offers a succinct collection of relevant titles that could be found in other school or public libraries.

Alternatively, Learning for a Sustainable Future (LSF), has a site called Resources for Rethinking (R4R.ca) that allows the user to do various searches. By clicking on their Children's Literature link and identifying the grade and the theme of "Climate Change" in the drop down boxes, another set of suggested titles will appear that could be helpful.

The following is the publisher's synopsis of the book *What is Climate Change* by Gail Herman.



What is Climate Change? By Gail Herman
The earth is definitely getting warmer. There's no argument about that, but who or what is the cause? And why has climate change become a political issue? Are humans at fault? Is this just a natural development? While the vast majority of scientists who study the environment agree that humans play a large part in climate change, there is a counterargument. Author Gail Herman presents both sides of the debate in this fact-based, fair-minded, and well-researched book that looks at the subject from many perspectives, including scientific, social, and political.

Example Activity

- Read the introductory chapter aloud. This introduction uses an example of how the polar bear's life has changed since 2016 due to the effects of climate change.

- Follow this by listening to the first 2:06 minutes of "What is Climate Change"? (this corresponds to ***Chapter 1: Things are Heating Up*** in the story and then continues to explain what is happening as a result of rising temperatures).
- The rest of the sound bite (from 2:05 - the end) explains the impacts of this phenomenon around the world. You might want to have students listen to the entire clip. In this case, have a large world map available to point out the various regions mentioned (e.g., Arctic Ocean, Alaska, Lake Chad in Africa, etc.). As well, compare the imperial measurements mentioned (i.e., 2 and 8 inches) to their metric conversions, which students can visualize using a ruler.

As you read through the book, discuss how people, animals and plants are feeling and affected by these changes.

Possible Discussion Questions:

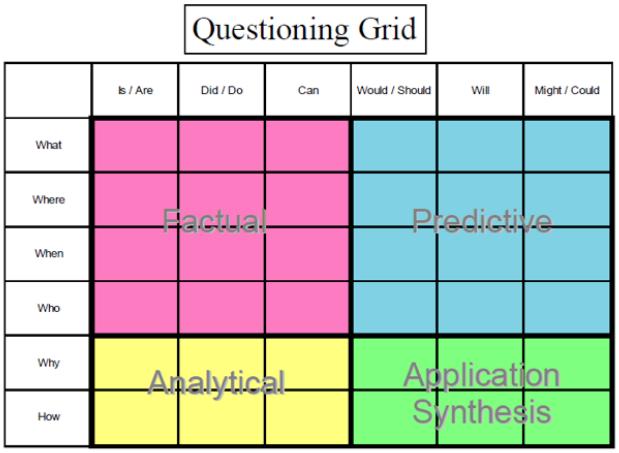
- What is your favourite weather? Why?
- What would happen if it never stopped raining? Or if it didn't rain at all?
- Who or what is the cause of climate change?
- Why has climate change become a political issue?
- Is this just a natural development?
- Are humans at fault?
- Help younger students with question starters (Who, what, where, when, why and how).
- Look at the chapter titles in the book, and think about what questions you would ask before reading the chapter.
- Does climate change affect humans and animals?
- How do the decisions made by the government impact people's lives in relation to climate change?

Extension Activity Suggestions:

- Get Outside: Challenge students to find examples of climate change actions from in and around the school yard that they can photograph. For example, solar panels on a building, wind mills, trees providing shade, green spaces replacing asphalt for cooling, or different ideas for greening school grounds. Visit Evergreen for more information and ideas: **School Ground Greening Projects**

- Explore the activity from ***Green Teacher*** magazine called Weathering Climate Confusion to clarify the difference between climate and weather while alerting students to levels of public confusion about the two terms.

B. Question Generation

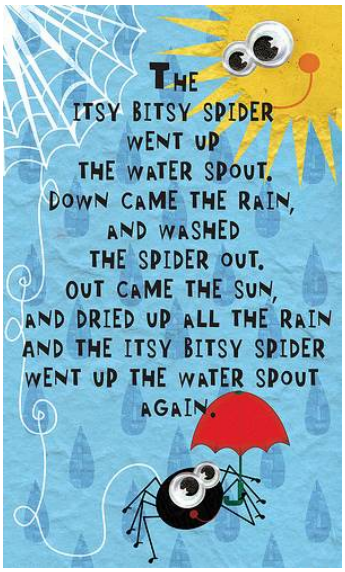


At this point in the inquiry, we want to harness students' curiosity and build off the provocations that have captured their interest by generating meaningful questions to continue to drive the learning process. This section will outline pathways for question generation depending on the provocation(s)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

Use a **Q Chart** to assist in developing questions. This question creation chart provides an example of this in practice. Learn more here.

Example Activity: Have students generate as many questions as they can in a given period of time (4-5 minutes) based on what they heard/read in the book, ***What is Climate Change?*** by Gail Herman. Write each question on a separate sticky note. Help students to understand the types of questions they have asked by having them place their sticky note in the correct quadrant.

Here is a sample of how to classify your questions using a simple, familiar text.



It may be helpful to colour code the chart as in this image below. Those in the pink quadrant (factual), or remembering and understanding, are the lowest order of questions. These answers can usually be found "right there" in the text. ***Who climbed up the water spout?***
Those in the yellow quadrant (analytical), or applying and analyzing, are those answers that can also be found in the text but students need to "think and search" the text and make inferences to find answers. ***How many times did the spider climb the spout?***
Those in the blue quadrant (predictive), involve understanding and applying, requiring students to dig deeper into the text to try to interpret what the author is saying. ***Why do you think the spider decided to climb back up the spout?***
Those in the green quadrant (evaluating), are highest order thinking questions; students need to look beyond the text and evaluate and analyze what the author is saying. ***Have you ever tried and failed at something the first time, and yet had the courage to come back and try again?*** (myalwayslearning)

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

Have students continue their thinking through the **Think, See, Wonder** routine**.**

Example Activity : Have students look at the cover of the book and/or any of the illustrations within the book or images from any other of the picture books found in **this list**. Based on what they see and what they think from their previous knowledge, have them brainstorm ideas for “what they wonder” about weather and climate.

D. Determining Understanding

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.

Work with students to fill out the “Know” and “Want” columns of a **KWL (Know-Want-Learned) Chart** in relation to the questions generated.

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

Sample KWL Chart:

TOPIC:		
K – What I Already **Know**	**W** – What I **Want** to Know	**L** – What I **Learned**

E. Pursuing Learning

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 climate change.

Example Activity:

Climate Change 101 is a learning module that was created for Learning for a Sustainable Future by Let's Talk Science.This learning module is suitable for grades 3-4 students to complete as a class or grade 5-6 students to complete individually or with a partner. It is made up of three lessons on the science of climate change. Lesson 1: What are the indicators of climate change, Lesson 2: What is the greenhouse effect?, and Lesson 3: How can we tackle this problem?

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, this helps them to solidify knowledge and deepen understanding.

Example Activities:

Journal reflection prompts:
This is why I care about climate change...

- Thinking about my questions, this is why I think the question is important and what I currently know…
- Reflect how you would explain (text or drawing) any of the following to a classmate, family member, or neighbour: climate vs. weather, how the greenhouse effect works, the effects of climate change especially in our community (or province/territory or nation).

15 Meaningful and Hands-On Climate Change Activities for Kids From We Are Teachers students can choose to try any of the 15 science-based activities to reinforce their understanding of weather vs. climate change. These 15 activities are all linked to questions, instructions, and explanations, from credible websites and organizations. Students can choose activities or teachers can assign ones for consolidation.

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.

Using the RAFT (Role, Audience, Format and Topic) strategy helps students understand their role and how to effectively communicate their ideas clearly to their chosen audience.

Example Assessment: You are school artists and you are invited to explain to the school community the difference between **weather and climate.** You have been given space on a graffiti wall where you can share your ideas and opinions about the difference between

weather and climate. Be ready to present it to the school community.

Take Action:

These ideas for action can be utilized at any point in the learning process, whether it's now or after completing more guided inquiries. Note, the suggestions are consistent in each chapter.

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.

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:

- Educate your community about the risks posed by climate change
- Create posters that represent some of the local risks to your community
- Organize an assembly to present information in an engaging manner
- Perform a school-wide waste audit, and make a plan for a less wasteful path forward (one example is offered through EcoSchools at School Waste Audit)
- Take a personal or class pledge to make lifestyle changes:
    - Reduce meat intake
    - Reduce use of single-use plastics
    - Eco-friendly options in place of single-use items (e.g., plastic water bottles, paper coffee cups, etc.)
    - Walk or bike to school
    - Use both sides of paper
    - Turn off the lights when leaving a room
    - Unplug things when not in use
- Plant trees

Action Project Examples:

Watch this video titled **'Change the World' in 5 minutes.** It is about an elementary class who has decided that they would spend the first 5 minutes of school each day of the week implementing sustainable change to the world. It's more of a movement that gives the youth the power to make a difference.

Visit **Young Voices for the Planet** for a myriad of ideas!
The mission of ***Young Voices for the Planet*** (YVFP) is to limit and mitigate the magnitude and impacts of climate change by empowering youth, through uplifting and inspiring success stories, to take an essential role in informing themselves, their peers and their communities—becoming leaders and changing laws, changing minds and changing the world.

“OUTDOOR ED PROJECT: OUTDOOR LEARNING IS WHERE IT’S AT!”-Father Fenelon Catholic School- Pickering, ON (2017) K-8

- The students decided how to create different learning areas in the outdoors. As small groups committed to designing and implementing ideas, student teams worked to create the areas for climate change learning in their schoolyard. They believe that it is vital for students to be a part of the learning outdoors and create a strong connection to their learning environment. Students from Kindergarten to Grade 8 were involved in ensuring that the project continues to be part of their learning at school. See their project here.