

Chapter 1: What is Climate Change & Why Care?

Inquiry 2: Introducing Climate Change

- < **Provocations** – *Infographic*
- < **Question Generation** – *What Makes You Say That, Umbrella Questions*
- < **Knowledge Building**– *Umbrella Questions*
- < **Determining Understanding** – *KWL*
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- < **Consolidation** – *Circles of Action, Headlines*
- < **Assessment** – *3-2-1 Strategy*
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A. Provocation

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

Infographics

“[Infographics](#) allow students to share information in a creative way,” as Sandy Cangelosi claims in her online article, [4 Effective Uses of Infographics in the Elementary Classroom](#).

- Share the “[What is Climate Change?](#)” infographic from [Ingenium’s Let’s Talk Energy](#) resource with your students. Explore the visuals before deconstructing the text. In the main image we see a polar bear, perched atop of an iceberg, which becomes the smoke from a smokestack from a factory in a big city next to a flaming tree. There is a lot happening in this imagery.
- Have students discuss what messages the image is trying to convey.
- Begin to deconstruct the text by size. The largest text tells us what the infographic is about. As the text gets smaller, the information gets more detailed. Depending on the grade level of your students you can decide how much information they will be able to interpret.

Possible Discussion Questions:

- An infographic tells a story about data. What is the main point of the story that this infographic is telling?
- What is the first thing you notice when you look at this infographic?
- What picture or piece of information is standing out in your mind after viewing this infographic? Why does that “speak” to you the most?



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.

What Makes You Say That? Is a strategy that promotes evidential reasoning (evidence-based reasoning.)

Example Activity:

- How do some of the smaller images help to tell the story?
- How does the size of the font help you understand the story this infographic is telling?
- What [vocabulary] words are directly associated with climate change? Create a word wall to ensure that all students understand these important terms.
- Have you read about or heard about an area affected by one of the effects of climate change mentioned in the image? Where was this and what happened?

With your class, develop **Umbrella Questions**, focused questions on climate change that are of interest to the students. It may take several drafts to develop umbrella questions that meet both student and teacher expectations.

In the example below, the quotes are from the infographic and the questions are possible questions that stem from the quote. These questions can be used as is or students can be encouraged to generate questions based on the quotes.

Example Activity:

- “Climate change affects biodiversity”
 - What is biodiversity?
 - How does climate change affect plants and animals?
- “Climate change is due to natural factors and human factors”
 - What natural factors contribute to climate change?
 - What human factors contribute to climate change?
 - What can we, as humans, do to stop climate change?
- “Greenhouse gas emissions are the main cause of climate change”
 - What are greenhouse gases and what causes their increase in our atmosphere?
 - Are there any alternatives to energy that don’t produce greenhouse gases?
- “Adaptation and mitigation are strategies for responding to climate change”
 - What does adaptation mean? What are adaptation strategies that respond to climate change?
 - What does mitigation mean? What are some mitigation strategies that respond to climate change?



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.

Another strategy used in [this infographic](#) to “tell a story” is the use of colour. Each colour—yellow, blue, grey and green—helps focus attention on different issues surrounding climate change. Place 4 pieces of coloured construction paper on the board or on a piece of chart paper and have students work in pairs or small groups to generate questions for each colour on sticky notes (same colour if possible).

From these sticky note questions, work as a class to develop [Umbrella Questions](#) focused on the “big ideas” of climate change. These questions will help ground the inquiry.



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.

Example Activity:

If you used the [KWL Chart](#) in the book provocation from Inquiry 1, students could return to their KWL chart and make revisions based on their new learnings.

Work with students to fill out the “Know” and “Want” columns of a [KWL \(Know-Want-Learned\) Chart](#) in relation to the [umbrella questions](#).

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 their umbrella 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.

Have students make a claim using the [Claim Support Question](#) strategy.

Example Activity:

1. Make a claim (a statement that is an explanation or interpretation) from what you see on the infographic.
2. Identify support (things you see, feel or know) for your claim.
3. Ask a question related to your claim. What isn't explained that you can explore further?

Alternatively you can have students use the [Facts or Fiction](#) routine to think more critically about the truth in something presented to them.

Example Activity:

1. What information do you think this infographic is trying to tell you?
2. Who would decide that this information is important to know and learn?
3. What information do you think needs proof to be believed?
4. Are there any facts on this infographic that we could question and need more information to understand or believe?
5. What parts of this infographic do you think are true? What makes you think that?
6. Are there any parts of this infographic that you think may not be true? What makes you think that?



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.

Have students work in small groups in a [Circle of Action](#) to discuss and brainstorm potential responsible and reasonable action.

Example Activity:

Knowing what we have learned about climate change so far, what can I do to contribute to reducing the effects of climate change...

1. In my inner circle (of friends, family, the people I know)?
2. In my community (my school, my neighbourhood)?
3. In the world (beyond my immediate environment)?

Ask students to create a [headline](#) based on the material presented so far.

Example Activity:

1. Write a headline that captures the most important aspect of this topic/issue.
2. How does your headline differ from what you would have said before we explored this topic?
3. How has your headline grabbed the readers' attention?



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.

Use the [3-2-1 Strategy](#) to have students summarize their learning by identifying 3 things they have learned, 2 things they would like to learn more about and 1 question they still have.

Example Activity:

1. Three - After the lesson, have each student record three things he or she learned from the lesson.
2. Two - Next, have students record two things that they found interesting and that they'd like to learn more about.
3. One - Then, have students record one question they still have about the material
4. Review - Finally, the most important step is to review the students' responses. You can use this information to help develop future lessons and determine if some of the material needs to be taught again.



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(or your own infographics!) 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](#).