

2040 - Exploring Climate Change



Name _____

Class _____

Teaching Sequence

Work through this resource material in the following sequence:

**20
minutes**

Part A: Activating Prior Knowledge

**20
minutes**

Part B: Understanding the Factors Contributing to Climate Change

**25
minutes**

Part C: Designing a Proposal for Future Research

5 minutes

Reflection

Part A: Activating Prior Knowledge

Preparation:

Print one copy of the [AGREE/DISAGREE signs](#) or create your own.

Step 1.

Begin by explaining to students that in this lesson they will be exploring the relationship between our energy choices and climate change. In the first part of the lesson, students will look at climate change by participating in a barometer activity to assess their prior knowledge of climate change and to provide an opportunity to explore some of the key facts and issues around climate change.

Stand on the Line

Using string, masking tape or chalk (this activity could be done outside) create a line on the floor/ground, long enough for all students to place themselves along. Explain to students that one end of the line means 'strongly agree' and the other end means 'strongly disagree', while the halfway point means 'neither agree nor disagree' (consider adding small signs with these titles along the line). Invite students to respond to a range of factors by positioning themselves along the line, according to whether they agree or disagree with the statement. With each factor, engage students in a brief discussion around their response to that factor.

Read the following statements to students, one at a time. Use the suggested responses to clarify key points with students:

- I know what the weather is.

Suggested response: Weather is the hourly, daily or weekly events such as temperature, cloud cover, wind, heat waves, storms or precipitation.

- I know what the climate is.

Suggested response: Climate is the long-term changes in patterns of weather over a long period of time, such as 20 years.

- I know what climate change is.

Suggested response: Climate change is a change in the pattern of weather, and related changes in oceans, land surfaces and ice sheets, occurring over time scales of decades or longer.

- I know what the greenhouse effect is.

Suggested response: The greenhouse effect has been around since the formation of the planet. Naturally occurring gases – such as methane and carbon dioxide – forms a blanket around the Earth, trapping heat from the sun in our atmosphere and keeping the Earth at a steady temperature where life can thrive. However, in recent years human activities – such as burning fossil fuels and deforestation – have seen an increase in the amounts of these heat-trapping gases (greenhouse gases) entering the atmosphere. This has meant that more heat from the sun is being trapped in our atmosphere. This is the greenhouse effect.

- I know what global warming is.

Suggested response: As more heat is trapped in our atmosphere, the temperature rises. This is known as global warming.



At the end of this activity you can leave 'Agree' and 'Disagree' signs where they are; you will use these again later in this lesson.

Step 2.

Once complete, explain to students that they will now watch a clip from the 2040 documentary. As they watch, invite students to record anything they find interesting or important:



2040 – Global Challenges Password: 2040_EDU

- What did you see in this clip?
- What did you find interesting or important about this clip?
- What human activities identified in this clip have caused the most amount of carbon to be released into our atmosphere?
Suggested answers: Burning fossil fuels for energy (including for transport), landscape changes including farming and land clearing.
- What do you already know about reducing emissions? What actions can we take?
Suggested answers: Use renewable energy (such as wind or solar), choose more sustainable forms of transport like public transport, ride-sharing, cycling or walking and try to stick to a plant-based diet.
- What questions do you still have about the content in this clip or about climate change?

Take a few minutes to clarify any questions or concerns students still have about climate change. Further information about climate change can be found here: [Bill Nye Climate 101](#), [Climate Council](#), [Department of Environment and Energy](#) and [Climate Change Factsheet](#). Alternatively, these questions can be used to guide further inquiry in another lesson or through homework.

Part B: Understanding The Factors Contributing To Climate Change

Step 1.

Invite students to return to the AGREE/DISAGREE signs and to respond to the following statement:

- I know what the relationship between energy and climate change is.
- I know what the relationship between food and climate change is.
- I know what the relationship between transport and climate change is.

Invite students to explain their position along the line and to share anything they already know about the relationship between these three factors and climate change.

Explain to students that they will now investigate this further as a class.



Before moving on you could spend a moment with students clarifying key terms such as energy and electricity. For example: Energy is the ability to make change, or the capacity to do work. Energy appears in many different forms including kinetic (movement), potential (stored energy), gravitational, light, heat, chemical, elastic and electrical. Electricity is a form of energy.

Step 2.

Break the class into a number of groups that can be divisible by three (e.g. 3, 6 or 9 groups). Give each group a number from 1 to 3. Explain to students that each group will be investigating one of the following factors contributing to climate change, based on the number they have been assigned:

1. Energy
2. Food
3. Transport

Each group needs to work to formulate two questions around the factor they have been assigned. For the first question, students need to formulate a question that could be answered through research. You may find it useful to provide students with the [**Generating Questions Factsheet**](#).

Explain that each group should aim to create at least five questions that they think they could answer through online research and record these on the Student Worksheet.

Once complete, invite each group to select what they think is the most interesting question their group generated, making sure this is a question they think they could answer. Each group should write this question down on a sticky note or small piece of paper and give it to the teacher. The teacher can then redistribute these questions to groups, with one question for each group. Each group then needs to take their question and conduct research in order to answer this question (remind students of the [Search Strategies for Googling](#) when conducting research online).



Explain to students the importance of staying focused on answering the question they are researching. Often when we conduct research, we find interesting information that 'sort of' relates to the question but doesn't help to actually answer our question. Suggest to students that they check that any information they do include in their answer actually helps to answer the question; any other information could be recorded on a separate piece of paper and titled something like "Did you know?" or "Other interesting things I found out".

Step 3.

When groups have conducted their research, they should find a visual way to present their information (e.g. poster, slide show). Conduct a Gallery Walk, so students can view each other's work, pose questions and share thoughts.

Gallery walk

A gallery walk enables students to provide feedback on their peers' work. Display students' work around the classroom and place a piece of blank paper next to each work to collect votes on. Invite students to move around the room viewing each others' work, then vote for their three favourite posters.

As an extension, students could also record one thing they like about the posters displayed, one thing they wonder, and one thing that may improve the work.

Part C: Designing a Proposal For Further Research

Step 1.

Explain to students that now they have conducted research into their assigned factor, they can think about an experiment or field work activity that would help them understand the factor they researched in more detail.

Step 2.

Assist groups to formulate an aim (or research question) that could be answered through their chosen method of research and develop a plan around how this research could be conducted. They will also need to consider what resources/equipment they would need to conduct this research.

Step 3:

Provide groups with the [Experiment Proposal Template](#) to assist their planning. Each group needs to:

- Develop a hypothesis
- Suggest resources that would be required
- Develop a plan for research (what would happen and why this approach has been chosen)
- Think about how much data they would need for this research
- Consider confounding variables and explain how these could be controlled.

Step 4.

Once the template is completed, you could either:

- Invite groups to share their ideas with the class; or
- Invite groups looking at the same factor to share their ideas; or
- Invite students to submit their ideas to the teacher.

Step 5.

OPTIONAL – Where feasible, students could conduct their experiments/fieldwork.

Reflection

Ask students to reflect on their learning throughout the lesson by completing the following sentence stems on the Student Worksheet. Encourage students to provide detail and examples to support their change in thinking.

- I used to think...
- Now I think...

Take It Further

To expand on student's learning in this activity, consider following up with this lesson; [2040 Vision For Your Community](#).

Teacher Reflection

Take this opportunity to reflect on your own teaching:

- What did you learn about your teaching today?
- What worked well?
- What didn't work so well?
- What would you share?
- Where to next?
- How are you going to get there?

What's Your 2040?

Record your students' work in their communities with the hashtag #whatsyour2040 and share their visions in the '2040: [The Regeneration' Facebook Group](#).

The 2040 crew would love to see your class's work.

These lessons have been created in partnership with

2040, Good Thing Productions

