Āhuarangi Hurihuri
Climate Change

Teaching Resource
Lessons 1, 2 & 3
Year: 4-8
Class time: 3 x 60 mins
Prep time: 15 mins

He aha rā te hirahira o te Āhuarangi Hurihuri?
What's the big deal about Climate change?

What teachers need to know

This resource contains three lessons.

The purpose of these lessons is for students to begin to understand the issue of our changing climate and how carbon from vehicles is a major contributor to this.

Your ākonga (students) will need these learning resources:

Lesson	Description and resources required	Time
Lesson 1 – Balloons	**Ko te Āhuarangi Hurihuri me te Mahana Haere o te Ao:** Ko taku mōhiotanga KWL chart: **Climate change and global warming** He Ngohe Pūtaiao Kati Mahana: **Ko te Whakamakoha Poihau ki te Hauhā** Science experiment: **Blowing up balloons with CO_2**	60 minutes
Lesson 2 – Greenhouse effect	He Ngohe Pūtaiao Kati Mahana: **Kati Mahana** Science Experiment: **Greenhouse Effect** He Tauira Whakamātau Pūtaiao Science Experiment template	60 minutes
Lesson 3 – Expert interview	Role play activity: • **Mātanga Āhuarangi Hurihuri** • **Climate change expert** Climate Change Slide Show – Google Slides: • **He aha rā te hirahira o te Āhuarangi Hurihuri** • **What is the big deal about climate change?** Watch videos – Ko te Āhuarangi Hurihuri me te Mahana Haere o te Ao | Global warming and Climate change (page 4) **Ko te Āhuarangi Hurihuri me te Mahana Haere o te Ao:** Ko taku mōhiotanga KWL chart: **Climate change and global warming** Discussion	45 minutes

Teacher preparation:

15 mins

- Read through this resource.
- See these resources for more detailed information about current global warming and local climate change:
  - Te ine i ō tātou tukuwaro | Counting our Carbon Emissions (see Teaching Resources)
  - NASA Climate Website for Adults
  - Royal Society of NZ – Climate change implications for New Zealand

Lesson 1 and 2:

- Print out KWL Chart (Know, Wonder, Learned) – per student/pair/group.
- Print out the experiment instructions in Lessons 1 and 2 – per student/pair/group.
- Print out the Science experiment template – per student/pair/group.
- Gather materials needed for experiments.

Lesson 3:

- Read Role play – Climate change expert. Print out for one person.
- You could invite a mana whenua member from your whānau, local marae or iwi that could come and share pūrākau (stories) about the effect our rapidly changing climate has on Ranginui and Papatūānuku and other atua.

Learning intention – students will:

- Understand the basic science of global warming.
- Know some ways to reduce the effects of global warming.

Success criteria – students can:

- Record observations of an experiment and explain how the greenhouse effect works.
- Discuss findings with other students.
- Use questioning skills to help understand climate change.
- Discuss what actions could be taken to reduce climate change.

New Zealand Curriculum Achievement Objectives:

Science:

Level 2 – Investigating in science:

- Students will extend their experiences and personal explanations of the natural world through exploration, play, asking questions, and discussing simple models.

Level 3 and 4 – Investigating in science:

- Students will build on prior experiences, working together to share and examine their own and others' knowledge.
- Students will ask questions, find evidence, explore simple models, and carry out appropriate investigations to develop simple explanations.

Education for sustainability concepts:

- Interdependence.
- Participation for change.
- See Education for sustainability

Learning experience

60 mins

Lesson 1:

1. Fill out a **KWL chart** (Know – what I know now, Wonder – what I want to know, Learned – what I have learned) as a class, group or individually, about climate change and global warming. — 15 mins
2. Collate the 'wondering questions' (what we want to know) as a class. — 10 mins
3. Choose, write and display the 3 questions your class would most like to answer. — 5 mins
4. Make carbon dioxide using baking soda and lemon juice. — 30 mins

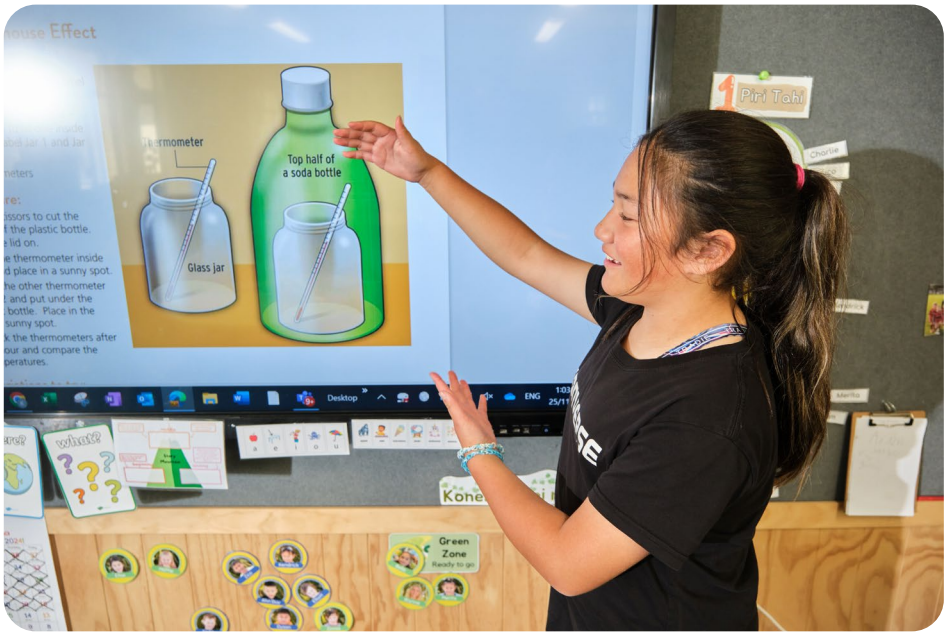
   See **Experiment Blowing up Balloons with CO_2**, using the **Science Experiment Template** provided.

60-90 mins

Lesson 2:

1. Carry out the **Greenhouse Effect - Science Activity** using the **Science Experiment Template** provided (this can take up to 90 mins).

   This process is what is causing global warming of the Earth. Instead of a plastic bottle keeping the heat in from the sun, greenhouse gases are. The main one is carbon dioxide.
2. Discuss where the greenhouse effect happens in everyday life, eg, in gardens or cars.
3. For further research on the greenhouse effect – **NASA Climatekids – Greenhouse effect**.
   This experiment could be replicated by groups to get a robust set of data.



Learning experience

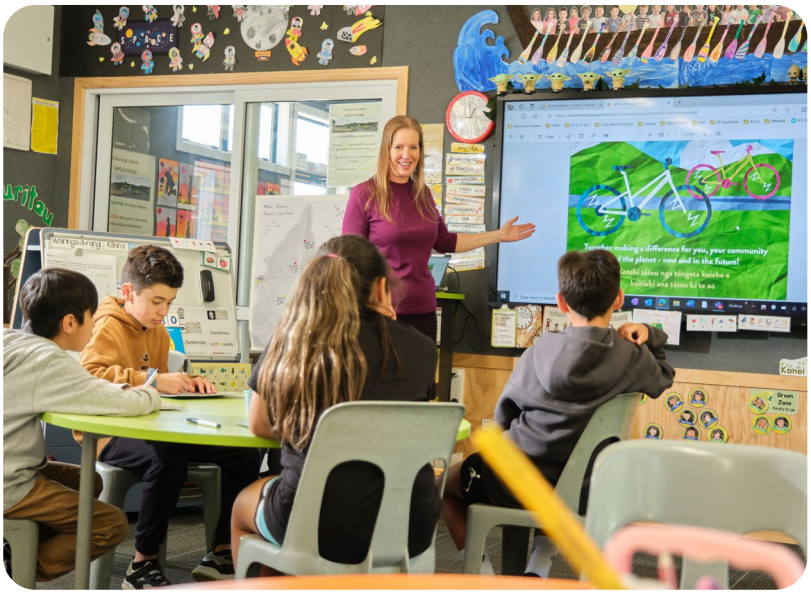
45 mins

Lesson 3:

1. Listen to a Climate Change Expert. A student or teacher can role play being the 'expert'. They can use the Climate Change Expert Talk and Climate Change Slide Show to help them. — 10 mins
2. Watch these videos to learn more about global warming and climate change:

What is the Greenhouse effect?	2 min 03 secs CC Ads: ☑
Climate change 101 with Bill Nye – National Geographic	4 min 09 secs CC Ads: ⃠
Bill Nye explains Climate Change using Emoji	1 min 50 secs CC Ads: ☑
Climate Change according to a kid	2 min 11 secs CC Ads: ⃠
The Next Generation Asks World Leaders at UN: Why Not Act on Climate Change?	2 min 26 secs CC Ads: ⃠

3. Answer your questions on your **KWL chart** and add any other interesting information from conducting the experiment, listening to the expert or doing further research. — 15 mins
4. Discuss: What actions are we already taking to reduce climate change in our families? — 5 mins



Further activities, resources and links

- Climate Change Team Challenge Quiz: In teams, develop a five-question quiz for another team to answer on Climate Change. Teams record their questions and answers, then quiz each other. Teams mark and give answers to the ones that were incorrect or missed.
- Visit our Ko te Kete Āhuarangi (Carbon Kete) for a wide range of relevant resources.