

## LEARNING AREA: SCIENCE

(Planet Earth & Beyond, and Nature of Science)

**Lesson Aim:** Students think about who creates carbon emissions and how we can change this.

**New Zealand Curriculum Level 2-3**

### Lesson Overview

Students learn about what a “carbon footprint” is, how carbon is emitted into the environment, the effect of this and identify areas of their life that they have control over to minimise their carbon footprint.

Use videos, Connected and School Journals, websites and newspaper articles, to learn about carbon emissions through human behaviour and the effect this has on the environment. Allow students to explore what makes it tempting to choose these behaviours but scaffold them toward understanding the negative consequences this has on the land and for future generations.

For ideas and inspiration, visit:

- Education for Sustainability: <http://nzcurriculum.tki.org.nz/Curriculum-resources/Education-for-sustainability/About-EfS>
- Science Learning Hub: <http://sciencelearn.org.nz/>

Discuss what generates carbon dioxide and how it affects our climate. Students to brainstorm emission-generating activities (eg. transport, agriculture, manufacturing and industry). Is it something we can influence, or is it due to other people? Students then draw around their foot on a piece of paper. Colour in each toe depending on how they get to school on each weekday (one toe = one day). Red for car, orange for public transport or car-sharing, green for walking, cycling or scooting. If they travel by car part of the way and then walk, that can be orange.

Inside the foot students write things within their control that could help lower their carbon emissions. Outside the foot they can write things they don't feel they can control or influence, or which are other people's responsibility.

Repeat the exercise in a few weeks. Have any of the children turned red to orange or green, or orange to green?



### Specific Achievement Objective Indicators

#### Nature of Science (Participating and Contributing)

- Use growing science knowledge when considering issues of concern to them.
- Explore various aspects of an issue and make decisions about possible actions.

#### Planet Earth and Beyond (Earth Systems)

- Appreciate that water, air, rocks and soil, and life forms make up our planet and recognise that these are also Earth's resources.

### Contextual Te Reo

- Haere = Journey, trip, travel
- Wake or Hīkoi = to walk (verb)
- Pahikara = bicycle
- Ete Pahikara = to bike (verb)
- Oma = run
- Pūtaiao = science
- Paitini = to pollute
- Kaitiakitanga = guardianship
- Whenua = Land
- Papatūānuku = Earth Mother

[Māori Dictionary](#)

[Māori Science Dictionary \(page translatable\)](#)

## Science Capabilities for Citizenship

- Gather and Interpret Data
- Interpret Representations
- Engage with Science

<http://scienceonline.tki.org.nz/Science-capabilities-for-citizenship>

## Key Competencies

- **Thinking:** students are required to think critically and to challenge assumptions
- **Participating and Contributing:** students learn about a particular way in which they can actively contribute to the wellness of their local, national and global community

## Adaptations for different year levels

- **Levels 1-2:** rank the “environmental friendliness” of different ways of getting to school.
- **Level 4:** Explore environmental impacts of travel beyond simply the mode. E.g. manufacturing methods of cars, bikes, shoes, scooters; what are green cars? Using a carbon emission calculator, students can also calculate their carbon footprint and track this over a period of time.

## Opportunities for cross-curricular links

- **Social Studies** – What can governments, local councils and businesses do to minimise their carbon footprint through transport? What can we do to support them to do this?
- **Visual Arts** – students use deliberate art-making conventions to communicate a specific message through their carbon footprints.
- **English (oral language)** – students to apply their science knowledge and create a speech or spoken word poem with the purpose of convincing their audience of the immediate importance of climate change, how daily travel impacts on this, and/or to persuade behaviour change.

## Possible applications or extensions of this activity

- Explore barriers to adopting sustainable transport practices, and importantly, strategies for overcoming these barriers.