**ACTIVITY: Drive it Down! – reducing emissions at your school**

In this activity, ākonga read an article, research and graph individual transport methods and then consider what action they can take to reduce the school’s greenhouse gas footprint.

By the end of the activity, ākonga should be able to:

* use literacy skills to read an article
* use numeracy skills to gather and interpret data
* discuss the relationship between transport options and greenhouse gas emissions
* use and critique evidence from the Drive it Down! project as it relates to their own school
* consider ways to use this information to reduce their own school-gate emissions.

**For teachers**

***Introduction/background***

GNS Science and Meadowbank School used an Unlocking Curious Minds project to measure carbon dioxide and carbon monoxide emissions via a sensor near the school’s entrance. Data gathered from the sensor showed spikes in these greenhouse gases during the school drop-off times when compared to the school holidays. It inspired enviro leaders to take action by organising active transport activities.

Use the Meadowbank School experience as a context to explore and record transport data, with an option to create student-led initiatives to reduce emissions at your own school gate!

***What to do***

1. Read the GNS Science article Climate science inspires students to drive down school-run carbon dioxide emissions.
2. Observe and discuss the graph displaying the data regarding carbon dioxide (CO₂) and carbon monoxide (CO) concentrations that occur during the day.
3. Discuss the quotes:
* “The sensor has enabled the students to visualise the invisible, and it’s been exciting to see how this has captured their imaginations and inspired them to create their own campaign.” *(Celia Wells, GNS Science)*
* “It shocked us seeing the spike in the morning during drop off time and we knew we could take action to reduce this, but we needed to get the whole community involved – we couldn’t do it alone.” *(Ava, Meadowbank Year 6 Enviro Leader student)*
1. Discuss modes of transport that do and do not emit greenhouse gases – for example, cars and buses, hybrid cars and buses, electric cars and buses and active transport options like walking, bikes and scooters.
2. Create and conduct a survey regarding transport options. Collect and graph the data.
3. Consider what actions the students/class/school might be able to take – using the Meadowbank School experience as an example.

***Considerations***

* Keep in mind Ava’s statement, “We needed to get the whole community involved – we couldn’t do it alone.”
* Some whānau may have no option but to drive students to school. Consider how ākonga in these circumstances can participate – for example, creating posters/announcements to publicise events or creating and editing videos during the events.

***Extension ideas***

* Explore the concept of [atmospheric mixing](https://www.sciencelearn.org.nz/images/5549-atmospheric-mixing). This explains why the data does not show an equivalent spike during the afternoon school pick-up.
* Observe and discuss the [carbon cycle in cities](https://www.sciencelearn.org.nz/images/5548-the-urban-carbon-cycle) diagram. Transport is just one source of greenhouse gas emissions in cities. Discuss the arrows – direction (carbon sources and sinks), size (indicates higher/lower emissions) and colour (fossil fuel or biogenic emissions).
* Using this diagram, discuss how else might we be able to reduce carbon dioxide emissions.

***Acknowledgment***

This resource has been adapted from [resources](https://www.gns.cri.nz/research-projects/drive-it-down/drive-it-down-carbon-cycle-teaching-resources/) by GNS Science for the [Drive it Down! Measuring and mitigating school-gate emissions project](https://www.gns.cri.nz/research-projects/drive-it-down/).