

VR LEARNING TASK

Get to know your Carbon Footprint

Learning area

Humanities and Social Sciences -
Geography

Year level

Year 10

Duration

60 minutes

Task summary

Students will learn their individual carbon or ecological footprint with the use of Virtual Reality (VR). They will compare their data as a class, explore how carbon footprint affects climate change, and learn how people can reduce their impact.

Session overview

Students can identify their individual carbon footprint and choose different ways to make better lifestyle choices to reduce their impact.

Digital technologies

- VR
- AR
- Robotics
- Drones
- Other: _____

Required resources

Hardware:

- Handheld Virtual Reality (HHVR) headsets
- Devices
- Laptops / tablets / iPads
- Smart or interactive whiteboard
- Headphones

Websites:

- [Ecological Footprint Calculator](#) - A web-based app by WWF Australia to gauge what your personal Earth Overshoot Day is to see what kind of impact your lifestyle has on the planet.

VR videos:

- [simpleshow explains the Carbon Footprint \(2:00\)](#) - This video provides a brief explanation of carbon footprint.

- [Food and the Ecological Footprint \(2:54\)](#) - This video shares what Earth Overshoot Day means and how food consumption impacts our ecological footprint.
- [Virtual Reality/360 video: Meet your carbon footprint \(4:47\)](#) - A VR video by the UN Environment Program that talks about how humans' daily choices impact the environment and influence sustainability issues.
- [What impact do you have on the planet? \(360 video\) \(6:15\)](#) - A VR video that explores how human lifestyles affect the planet, created by the UN Environment Program.

Teaching resources:

- [Teaching deck](#) - this is a slide deck template that teachers can download and use for this learning task.
- [Student digital notebook](#) - download a copy and distribute it to students via email or your learning management system.
- [Our class eco footprint](#) - A collaborative Canva whiteboard for students to add their Eco Footprint data. No accounts or logins will be required.
- [Class overshoot day data spreadsheet](#) - this Excel sheet will be used for students to enter their data and calculate whole class averages.

Other resources to try (optional)

Websites:

- [Overshoot Day](#) - A website that looks at what Earth Overshoot Day means, including solutions and projects on climate change action. There are also lesson plans for teachers.

Articles:

- [When virtual reality raises awareness of our impact on the environment](#) - How VR helps to raise awareness about climate change.
- [Can XR Slow Climate Change?](#) - How immersive experiences are being used to address climate change issues, particularly in Canada.

Miscellaneous:

- [VR/AR Safety Poster](#) (PDF)

Planning and preparation

Assumptions

Students should have:

- Experience in using collaborative boards (Canva whiteboard) and spreadsheet.
- Some background in learning about climate issues.
- The ability to navigate and use YouTube 360° videos on the devices with the HHVR headsets.

Additional preparation for teachers

- Check that all devices are fully charged and in working condition.
- Ensure all apps are installed and working properly.
- Watch the suggested videos ahead of time to check if the content is suitable for students.
- Distribute the student digital notebook to students.

Task Sequence

1

Introductory activity / Provocation (5 mins)

Inform students that this task will focus on carbon footprint; learning what it is and how we can reduce our impact on the environment.

Ask students what they know about 'Carbon Footprint'.

Show the video on slide 2 of the teaching deck [simpleshow explains the Carbon Footprint](#) (2:00).

2

Pre-activity discussions (5 mins)

Use slide 3 of the teaching deck to gather student's prior knowledge by discussing:

- What did you find most surprising from the video?
- Have you ever looked into your personal carbon footprint?
- Have you heard of "Earth Overshoot Day"?

3

Activities (40 mins)

Show students the video on slide 4 of the teaching deck [Food and the Ecological Footprint](#) (2:53).

Read the definition on slide 5 of the teaching deck:

"Earth Overshoot Day marks the date when humanity's demand for ecological resources and services in a given year exceeds what Earth can regenerate in that year."

Discuss the graph on slide 5 with students, pointing out the years where the date occurred later / earlier in the year, any patterns or trends students may notice, and why they think the date keeps moving forward.

Ask students for some examples of their own personal consumption practises:

- *What is one of your food consumption practices that negatively affect the environment?*
- *Do they have any food consumption practices that positively affect the environment? What are they?*
- *What other consumption practices do you know that may affect the environment? (driving to school/work, using the air conditioning/heater regularly, etc).*

Tell students that they can now check their individual ecological footprint, using Global Footprint Network's [Ecological Footprint Calculator](#), through the link found on slide 2 of their student digital notebook. Allow students time to answer the questions and get their results (approx. 5 to 10 minutes).



Once completed, ask students to take a screenshot of their results and post it on slide 3 of their student notebook.

They will also need to follow the link found on this page to post their results on the [Our Class Eco Footprint](#) Canva whiteboard. Teachers may choose to keep the data anonymously, or ask students to add their names to their screenshots. Here's a sample screenshot -



Ask students to also add their data to the class overshoot day data spreadsheet reminding them to not edit other students' data.

Once they've recorded their data, ask students to refer to slide 4 and 5 of their student notebook to watch the VR videos (using the HHVR headsets, or laptops) and answer their corresponding questions. Depending on the number of students and resources, students may need to partner up. Headphones are required to listen to the information provided.

- [Virtual Reality/360 video: Meet your carbon footprint \(4:47\)](#)
 - Slide 9 of the teaching deck and slide 4 of the student notebook.
 - Students to watch the video in VR mode and answer the three questions:
 - What everyday choices did you see in the video that impacts our environment? (e.g. buying imported foods, excessive driving)
 - How did you feel when viewing these scenes? Why?
 - What were some strategies to reduce your carbon footprint?
- If time allows, or for students who finish early, they can view the second video too [What impact do you have on the planet? \(360 video\)\(6:15\)](#)
 - Slide 10 of the teaching deck and slide 5 of the student notebook.
 - Students to watch the video in VR mode and answer the four questions:
 - What was an interesting fact that you learnt?
 - What countries use the most amount of materials/resources? Why do you think this is?
 - When it came to transport, who had the biggest carbon impact?
 - What's one thing you now hope to do differently to lower your carbon footprint?

4

Check for understanding (10 mins)

Display the collaborative [Canva whiteboard](#) briefly to view everyone's results.

Use the Google Sheet (or Microsoft Excel) to closely look at the gathered data.

Use slide 11 of the teaching deck to open discussions over what they notice about the data:

- What was the earliest Overshoot Day we had? What was the latest? What does this mean?
- What was the least number of Earths needed? What was the most number of Earths?
- Let's have a look at our class average for how many Earths we need to survive.
- What's one thing that you are hoping to change in your lifestyle to reduce your carbon footprint?

Differentiation for students with additional needs	Extension ideas	Video tips
<p>Allow students to record their responses via voice-to-text functions.</p> <p>View VR videos on laptops/tablets instead of HHVR headsets.</p>	<p>Ask students to view Carbon-Neutral Dream Eludes Oasis City Near Abu Dhabi The Daily 360 The New York Times for inspiration of ways to create a low carbon lifestyle. Research some everyday tasks that produce high levels of carbon, and design a solution / alternative that will considerably reduce its carbon footprint.</p>	<p>The video for this learning task runs through the progression of activities and includes some useful tips for the teachers.</p>

Curriculum Connections

Australian Curriculum Version 9.0

Year 10 - Geography

The human-induced changes that challenge the sustainability of places and environments ([AC9HG10K01](#))

causes and effects of a change in an identified environment at a local, national, or global scale, and strategies to manage sustainability ([AC9HG10K04](#))

Cross-curriculum priorities

- Aboriginal and Torres Strait Islander Histories and Cultures
- Asia and Australia's Engagement with Asia
- Sustainability

General capabilities

- Literacy
- Numeracy
- Digital Literacy
- Critical and creative thinking
- Personal and social capability
- Ethical understanding
- Intercultural understanding