

SCIENCE ON ICE

An Antarctic Adventure!

Lesson Plan to support Episode 5: Climate Change on Ice

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Curriculum Links

Achievement Objectives

SCIENCE

Nature of Science: Understanding about science, Investigating in science, Communicating in science, participating and contributing

Levels One and Two	Levels Three and Four
<p>Living World – Ecology</p> <p>Life processes</p> <ul style="list-style-type: none"> Recognise that all living things have certain requirements so they can stay alive. <p>Ecology</p> <ul style="list-style-type: none"> Recognise that living things are suited to their particular habitat. <p>Evolution</p> <ul style="list-style-type: none"> Recognise that there are lots of different living things in the world and that they can be grouped in different ways. <p>Planet Earth and Beyond</p> <p>Earth systems</p> <ul style="list-style-type: none"> Explore and describe natural features and resources. <p>Interacting systems</p> <ul style="list-style-type: none"> Describe how natural features are changed and resources affected by natural events and human actions. 	<p>Living World – Ecology</p> <p>Life processes</p> <ul style="list-style-type: none"> Recognise that there are life processes common to all living things and that these occur in different ways. <p>Ecology</p> <ul style="list-style-type: none"> Explain how living things are suited to their particular habitat and how they respond to environmental changes, both natural and human-induced. <p>Evolution</p> <ul style="list-style-type: none"> Begin to group plants, animals, and other living things into science-based classifications. <p>Planet Earth and Beyond</p> <p>Earth systems</p> <ul style="list-style-type: none"> Appreciate (L3) / Develop an understanding (L4) that water, air, rocks and soil, and life forms make up our planet and recognise that these are also Earth's resources. <p>Interacting systems</p> <ul style="list-style-type: none"> Investigate the water cycle and its effect on climate, landforms, and life.

THE ARTS

Drama

Levels One and Two	Level Three	Level Four
Developing ideas <ul style="list-style-type: none"> Develop and sustain (L2) ideas in drama, based on personal experience and imagination. Communicating and interpreting <ul style="list-style-type: none"> Share drama through informal presentation and respond to elements of drama in their own and others' work. 	Developing ideas <ul style="list-style-type: none"> Use techniques and relevant technologies to explore drama elements and conventions. Communicating and interpreting <ul style="list-style-type: none"> Present and respond to drama, identifying ways in which elements, techniques, conventions, and technologies combine to create meaning in their own and others' work. 	Developing ideas <ul style="list-style-type: none"> Select and use techniques and relevant technologies to develop drama practice. Use conventions to structure drama. Communicating and interpreting <ul style="list-style-type: none"> Present and respond to drama, identifying ways in which elements, techniques, conventions, and technologies create meaning in their own and others' work.

ENGLISH

Levels One and Two	Level Three	Level Four
Ideas <ul style="list-style-type: none"> Select, form, and express ideas on a range of topics Language features <ul style="list-style-type: none"> Use language features appropriately, showing some understanding of their effects. Structure <ul style="list-style-type: none"> Organise texts, using a range of structures 	Ideas <ul style="list-style-type: none"> Select, form, and communicate ideas on a range of topics Language features <ul style="list-style-type: none"> Use language features appropriately, showing a developing understanding of their effects. Structure <ul style="list-style-type: none"> Organise texts, using a range of appropriate structures 	Ideas <ul style="list-style-type: none"> Select, develop, and communicate ideas on a range of topics Language features <ul style="list-style-type: none"> Use a range of language features appropriately, showing an increasing understanding of their effects. Structure <ul style="list-style-type: none"> Organise texts, using a range of appropriate structures.

Key Competencies

- Thinking
- Using language, symbols, and texts
- Managing self
- Relating to others
- Participating and contributing

Learning intentions

- Support the vision of Antarctica New Zealand: Antarctica and the Southern Ocean - valued, protected, understood
- Watch the episode, infer information, reflect and summarise
- Understand and respond to the challenges faced by early explorers to Antarctica
- Undertake and promote positive action against Climate Change

Key Vocabulary

Te Tiri o te Moana	Antarctica
Taonga	treasure
wero	challenge
expedition	a journey undertaken by a group of people with a particular purpose such as research or exploration
conserve	to protect something from harm or destruction
artifacts	a man-made object of historical or cultural interest
Hägglund	vehicles used in Antarctica to transport people and cargo across the rough, snowy and icy terrain
Sir Edmund Hilary	a New Zealand explorer who is most famous for being the first to summit Mt Everest
Robert Falcon Scott	a British explorer and Royal Navy Officer
Ernest Shackleton	an Irish explorer
Innovator	someone who creates a new device or who comes up with a new idea or method of doing something
Climate Change	refers to changes in the earth's climate, especially the gradual rise in temperature
Sea ice	frozen ocean water
Ice sheet	a large mass of glacier ice
Sea level rise	an increase in the height of sea levels.
Fossil fuels	a fuel, such as coal, crude oil and natural gas, formed by natural processes acting over a very long period of time
Greenhouse gases	gases in the Earth's atmosphere that trap heat
Atmosphere	the thin layer of gases that surround the Earth
continent	a large, solid area of land

Lesson Sequence

Activity 1 – Scott, Shackleton and Hilary

There are many accounts of these explorers available online. Alternatively, concise versions are available in Resource 1. Scott's story is also told well in this short video clip: <https://www.bbc.co.uk/teach/class-clips-video/ks2-robert-falcon-scott/zdhdgwx>

Encourage the students to think about how the explorers were feeling and what they might be thinking at different points in their journeys.

One student is in the hot seat, which means that they are the explorer (a generic explorer to Antarctica, or one of the three they have learnt about). The rest of the class takes turns asking the student questions, e.g.

1. What made you want to explore Antarctica?
2. What did you miss most during the expedition?
3. What was the best thing you saw?
4. What was the hardest part of the expedition?
5. How did you feel when ...?
6. What did you think when ...?

Change students in the hot seat and repeat. This could also be done in smaller groups.

Resource: Ep5, Resource 1 – Explorer Stories

Activity 2 – VR exploration

Explore Hilary's hut with the students through a virtual reality experience developed by the Antarctic Heritage Trust. Instructions on how to download this can be found here: <https://nzaht.org/share/virtual-reality/>

Note: there is also information on this website about how to bring the Antarctica Virtual Reality Experience to your school.

Activity 3 – Creative writing

Option 1: Diary entry

Students imagine they are one of the explorers who ventured down to Antarctica and write a diary entry from that explorer. They can choose a particular moment from one of the stories, or just write a generic diary entry. Encourage the students to focus, not only on what the explorer did that day, but also what they saw and how they felt.

Option 2: “Love Poem” from a Scientist to Antarctica

Acrostic poem with lines detailing what scientists love about Antarctica, and what they fear about the future of Antarctica.

Activity 4 – Positive action against Climate Change

Option 1: Students brainstorm ideas in pairs, groups or as a class to decide how they are going to take positive action against climate change. This could be on an individual /class level, or are there things they could change at home or around the school/community. What needs to happen to create lasting change and how can you convince others to come along? Use ideas from the episode to get started.

Option 2: Students create a poster and/or a catchy radio jingle giving some practical tips people can include in their daily lives to help reduce the effects of Climate Change. They should be encouraged to use convincing and inspiring language, perhaps even including an inspirational quote, as was done in the episode, to get their audience on board.

Supporting Resources

School Journals

Captured in Ice

Reading Level: Year 6, Edition: Connected L3, Year: 2017

Science on the Ice by SILVERWOOD, Neil (e-book available)

Reading Level: Year 8, Edition: L4 Nov, Year: 2018, Pages: 8-21

Climate Change: Our Biggest Challenge by GLENSOR, Patricia

Reading Level: Year 8, Edition: L4 June, Year: 2018, Pages: 2 - 11

How big is your footprint? by BILBROUGH, Norman

Reading Level: Year 5, Edition: Part 03 No. 01, Year: 2011, Pages: 20-27

Time capsule in the Antarctic by WESTERSKOV, Kim

Reading Level: Year 4, Edition: Part 01 No. 3, Year: 1991, Pages: Pgs 6-9

More than a mountaineer by O'BRIEN, Bill

Reading Level: Year 7, Edition: Part 03 No. 03, Year: 2003, Pages: 18-22

The big chill and the big drill by ALCHIN, Rupert

Reading Level: Year 5, Edition: Connected 1_2, Year: 2008, Pages: 15-20

Books

Antarctic Journeys by Philippa Werry

Big Book of Antarctica – Charles Hope

First to the Top: Sir Edmund Hillary's Amazing Everest Adventure - David Hill

Shackleton's Journey - William Grill

Shipwreck at the Bottom of the World - Jennifer Armstrong

Adventures on Earth - Simon Tyler

Climate Change (DKfindout!) - Maryam Sharif-Draper

This Book Will (Help) Cool the Climate- Isabel Thomas

A Climate in Chaos- Neal Layton

Climate Change (Ecographics) - Izzie Howell

Ice Breaker – an Epic Antarctic Adventure – Maria Gill

From Greta Thunberg to Sally Morgan: 10 books to help kids come to grips with climate crisis:

<https://www.theguardian.com/books/2019/jul/09/from-greta-thunberg-to-sally-morgan-10-books-to-help-kids-come-to-grips-with-climate-crisis>

Websites

<https://www.antarcticanz.govt.nz/>

<https://nzaht.org/>

<https://www.coolantarctica.com>

http://www.bbc.co.uk/history/historic_figures/shackleton_ernest.shtml#:~:text=In%201914%2C%20Shackleton%20made%20his,live%20on%20the%20floating%20ice.

http://www.bbc.co.uk/history/historic_figures/scott_of_antarctic.shtml

<https://nzhistory.govt.nz/media/photo/edmund-hillary-antarctica>