CHILLED

A COOL STORY WITH A WARM MESSAGE

Teaching Resources

Compiled by Vanessa Wells

in association with the

INTERNATIONAL ANTARCTIC CENTRE

Antarctica New Zealand

elantimedia

NEW ZEALAND playhouse

Contents

Overview

Dear Teacher,

Chilled is a very unique experience!

This resource is designed to be used by you as you plan lessons for your class, leading up to and following the attendance of our performance of *Chilled* at your school.

The playwrights travelled to Scott Base in November 2018, as guests of Antarctica NZ under their Community Engagement Programme. Their aim was to research, write and film content for a children's play. The result of this work is Chilled, and New Zealand Playhouse are delighted to present it to schools across New Zealand and Australia.

This resource pack has been created in association with the **International Antarctic Centre**, based in Christchurch NZ, and also in collaboration with the many scientists and artists that we have encountered while researching and writing. Thank you to everyone who has contributed - it is truly a team effort!

We have combined innovative activities, traditional teaching tools, and up-to-date resources, and we encourage you as a teacher and facilitator, to use these materials in whatever way works best for your students.

The themes of the play, *Chilled*, fit into various learning areas within the curriculum (Science, Social Studies, English and The Arts) in both New Zealand and Australia primary schools. Please feel free to adopt and adapt the resources however you see fit to meet the needs of your students.

We have co-constructed many of these activities and exercises, based on reflective practices and we welcome feedback. Please contact us if you would like to know anything more about the play, our process in writing it or the resource pack - we are here to help you get as much out of the play as you possibly can!

0800 894 500
resources@nzplayhouse.co.nz

Our **key objectives** are to:

- Educate and inspire primary school children about Antarctica.
- Encourage and foster a love of science from an early age.
- Empower school children to learn about climate change.
- Generate enthusiasm for the natural world within the primary school age group.

The Story

(spoiler alert!)

Our Antarctic adventure begins at the real Scott Base (with a little artistic license!) near the Ross Ice Shelf. Dr Nat, an oceanographer, and Sam the Base operational manager are waiting for the world famous You-tuber Chip Shoaldar to arrive! Sam is a big fan, but Dr Nat would rather be doing her sea ice research than "babysitting celebrities". When Chip arrives, he turns out to be every bit of the "celebrity" that Nat was dreading - loud, obnoxious and self centred.

Suddenly they receive news that Nat has to shift her research camp urgently due to the sea ice melting earlier in the season than expected. She and Sam rush away to arrange this and Chip grabs his moment to steal a Hagglund truck, ditch his hosts and head straight to the South Pole alone. He has a secret plan to "borrow" the South Pole and move it to the Equator so that he can be a world-wide hero and slow global warming all on his own. But his plan to move "the cold" to the tropics is flawed (no kidding!) and he gets himself into grave danger.

Chip loses the Hagglund in the ocean when the sea ice breaks up around him, but he survives via the escape hatch and finds shelter from an impending blizzard in the old Shackleton's Hut. Shackleton himself "appears" as Chip hallucinates from the cold, and Chip learns valuable lessons from all-singing and dancing wildlife! Nat and Sam catch up with him at the hut, but he locks them both inside, and continues south, determined to fulfil his plan.

Chip arrives at the South Pole, and as he loosens it, a crevasse cracks open and he falls in. Sam and Nat arrive just in the nick of time to help him out, but Chip must choose between the pole he covets and survival. Nat explains that climate change can't be tackled by one person alone, it needs all of us to make an effort. And (via an awesome song with a rap chorus) she explains that small changes can make a big difference. Teamwork is what it's all about!

Curriculum and Key Competencies Learning Areas/Levels within the NZ Curriculum:

Chilled, in association with this resource pack, contributes to the development of all 5 Key Competencies as identified within the NZ Curriculum (NZC):

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

Specific NZC Achievement Aims, and their levels are identified with each activity, and summarised below:

Literacy:
English - Levels 3-4

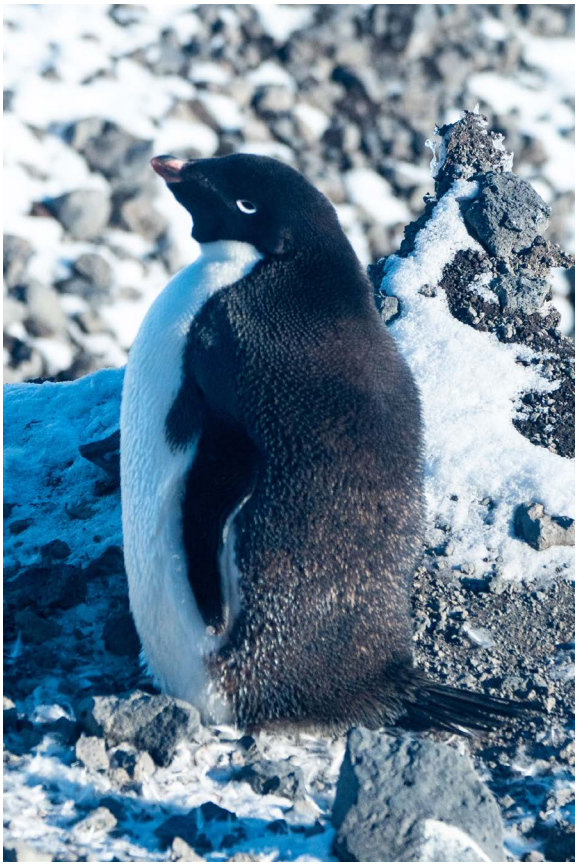
Numeracy:
Mathematics - Levels 1-4

Science:
Nature of Science - Levels 1-4
The Living World - Levels 1-4
Planet Earth and Beyond - Levels 1-4

Social Sciences:
Social Studies - Levels 1-4

The Arts:
Visual Arts - Levels 1-4
Drama - Levels 1-2

Health and Physical Education:
Movement Concepts and Motor Skills - Levels 1-4
Relationships with Other People - Levels 1-4



Video Resources

We are currently working on a set of video resources for you to watch with your class and can't wait to share them with you when they're ready at the end of term one, 2020.

They will be available from http://www.elantimedia.com/education

Why Study Antarctica?

Antarctica is an exciting place that captures the imagination, and fascinates young and old alike. Your class will love learning about the incredible wildlife, the adventurous explorers and the amazing science that is being studied there. As well as being a continent that people are naturally curious about, it's charismatic megafauna (penguins, whales and seals) are sure crowd pleasers!

There are many stories, books, and websites about Antarctica (we have put a few links at the end of this resource).

Here are a few key facts:

- Antarctica is a truly unique environment and is extremely important from a local "neighbourly" perspective (both NZ and Australia are directly connected to the continent via the Southern Ocean) and from a global perspective, for it's effects on the world's climate and ocean currents.
- Antarctica is the only landmass in the world that is not "owned" by any one country or government. It is considered neutral, and is under the governance of the signatories of the Antarctic Treaty. Both New Zealand and Australia were original signatories when the Treaty was first formed in 1959. To date, more than 56 countries have joined the Treaty.
- Antarctica's human history is relatively recent and the first explorers who went there were very brave and hardy. The first documented discovery of the continent was in 1820, although ancient Māori legends speak of journeys deep into the Southern Ocean, well before that!
- The scientists working in Antarctica are studying everything from animals to the weather, from microbes to outer space!

Studying Antarctica is also a great way to start teaching your students about climate change. The effects of global warming on Antarctica will have impacts on the rest of the world, and understanding what scientists are learning on the icy continent is a good introduction to earth systems and processes.

Activity - Science

NZ Curriculum Strand: The Nature of Science

Understanding About Science
Junior - Levels 1-2:
- Appreciate that scientists ask questions about our world that lead to investigations and that open-mindedness is important because there may be more than one explanation.

Senior - Level 3-4:
Identify ways in which scientists work together and provide evidence to support their ideas.

Communicating In Science
Junior - Levels 1-2:
- Build their language and develop their understandings of the many ways the natural world can be represented.

Senior - Level 3-4:
- Begin to use a range of scientific symbols, conventions, and vocabulary.

Participating and Contributing
Junior - Levels 1-2:
- Explore and act on issues and questions that link their science learning to their daily living.

Senior - Level 3-4:
- Use their growing science knowledge when considering issues of concern to them.

NZ Curriculum Strand: Living World

Life Processes
Junior - Levels 1-2:
- Recognise that all living things have certain requirements so they can stay alive.

Senior - Level 3-4:
- Recognise that there are life processes common to all living things and that these occur in different ways.

Ecology
Junior - Levels 1-2:
- Recognise that living things are suited to their particular habitat.

Senior - Level 3-4:
- Explain how living things are suited to their particular habitat and how they respond to environmental changes, both natural and human-induced.

Antarctic Food Chain

- Think about the ecology within Antarctica, and discuss the food chain. What eats what? Research the following animals and place them in a food chain - krill, fish, penguin, seal, whale.
- Food Chains can be simple or complicated, depending on how many different species are included. Sometimes they are described as Food Webs, as species compete for the same food sources.
- Think about what you eat. What is your food chain?

Food Chain Exercise

- Cut up the following piece of paper into long strips. Colour each animal strip a different colour (or print/write them on different coloured paper).
- Discuss where each belongs in the food chain.
- Join them together in a paper chain. Discuss ways of doing this - one long chain or many connected… which shows the Antarctic Food Chain best? Is it more of a Food Web than a simple chain? Ecosystems can be complicated!

Algae
Krill
Fish
Penguin
Penguin
Seal
Seal
Seal
Whale
Whale
Whale
Whale

Activity - Mathematics

NZ Curriculum Strand: Mathematics

Measurement

Junior - Levels 1-2:

- Order and compare objects or events by length, area, volume and capacity, weight (mass), turn (angle), temperature, and time by direct comparison and/or counting whole numbers of units.

Senior - Level 3-4:

- Use linear scales and whole numbers of metric units for length, area, volume and capacity, weight (mass), angle, temperature, and time.

Antarctica is the Coldest, Windiest, Driest Place on Earth!

Investigate how, and why:

- Antarctica is the coldest place on earth and because it is so cold, it doesn't rain, it only snows, so it is technically a desert!
- Because of the geography it is also the windiest place on earth.
- Antarctica has daylight for 24 hours a day during summer, and 24 hours of darkness a day during winter.
- How can that be? Discover how the tilt of the Earth's rotational axis affects the amount of sunlight that reaches the South Pole (and conversely the North Pole). And how it's not completely dark all the time!

Here's a good website to help understand what twilight and night time in the Antarctic can be like …

http://www.antarctica.gov.au/about-antarctica/environment/weather/sunlight-hours

How High is Antarctica?

Research how high is the highest mountain - in Australia, New Zealand and Antarctica?

Teachers tip!

Australia	**NZ**	**Antarctica**
Mt Kosciuszko	Aoraki/Mt Cook	Vinson Massif
2228m	3724m	4892m



(Mt Everest by comparison is 8850m)

How Big is Antarctica?

Look at a map of Antarctica. Find countries or continents that are of a similar size. Depending on your students level, you could discuss the ways to calculate the size of countries.

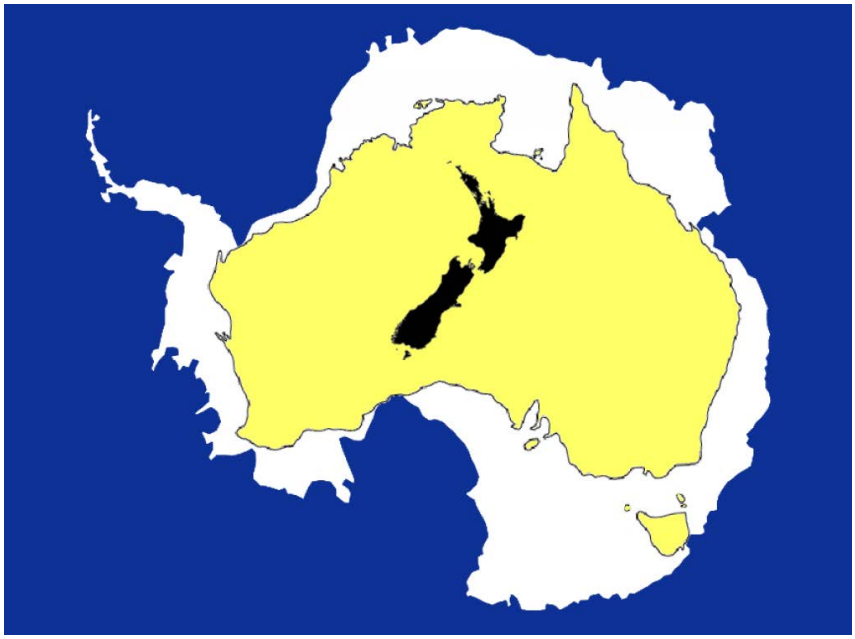
Here are some useful comparisons:

- Antarctica is approximately 14,200,000 square kilometres.
- Australia is approximately 7,692,000 square kilometres.
- New Zealand is approximately 268,000 square kilometres.

How big is your town? Your school? What can you compare Antarctica to to get a sense of scale?

The map below is from http://www.antarctica.gov.au/about-antarctica/environment

Print or trace the shapes individually on different pieces of paper or card. Students can cut them out and layer them up to understand the physical difference in size.



The Ross Ice Shelf

On the map of Antarctica (from wikipedia.com), find the Ross Ice Shelf.

This is the largest Ice Shelf in the world! It is the roughly the same size as the whole country of France. What other countries could fit into the Ross Ice Shelf, by comparing size?

Activity - Art

NZ Curriculum Strand: Visual Arts

Developing practical knowledge

Junior - Levels 1-2:

- Explore a variety of materials and tools and discover elements and selected principles.

Senior - Level 3-4:

- Explore some art-making conventions, applying knowledge of elements and selected principles through the use of materials and processes.

Draw Your Own Adele Penguin!

Research what different penguins there are living in Antarctica. Find images of an Adelie penguin. Now let's have a go at painting our own Adelie penguins!

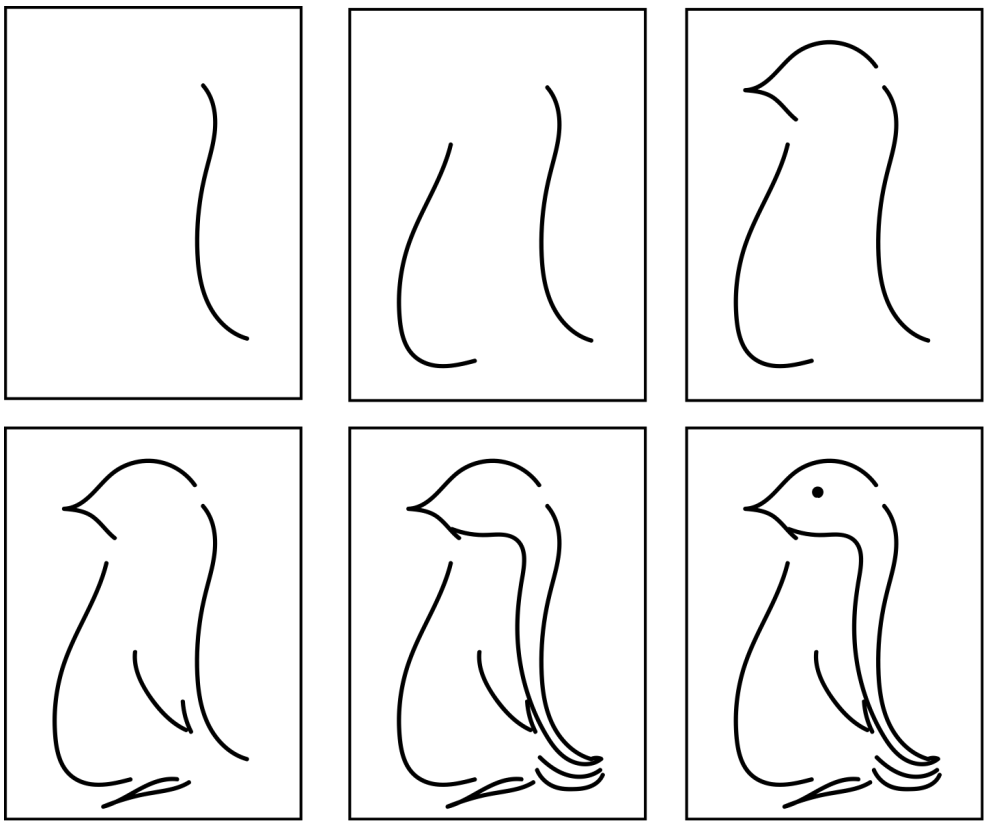
Get black paint and a few pieces of paper ready.

Practice some curves on a spare piece of paper, try different thicknesses, different sized curves. Try watering down the paint so you get different textures.

Get your penguin paper ready.

- Start with a stroke for the back.
- Add in a smaller curve for the belly.
- A curve for the head and beak.
- A couple of lines for a wing and some feet.
- Some tail feathers, and add some lines for some detail.
- Finally add an eye!
- If you colour it in black, remember to leave a little white for the eye.

Now try another! You could use a fresh piece of paper or start your own "rookery"!



Activity – Science

NZ Curriculum Strand: Planet Earth and Beyond

Earth systems

Junior - Levels 1-2:

- Explore and describe natural features and resources.

Senior - Level 3-4:

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

Experiment

Put water in the freezer. Mark a measure on the side of the container, and then mark the increase when it has frozen.

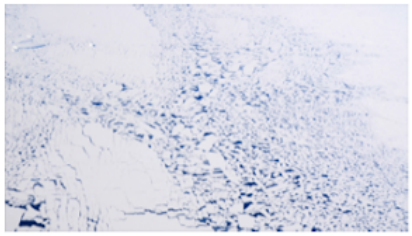
Discuss how water expands when it freezes. Will it return to the same size when it thaws? Try it and see!

Ice Isn't Just Ice!

Did you know there are many different sorts of ice? Understanding how ice is formed, and how it moves and melts in Antarctica is a key part of understanding the landscape and the climate.

On the next page are some different types of ice (there are many more too!).

Cut up the images, the names, and for higher level students, the descriptions too. Match them up and discuss the differences.

TYPE OF ICE	DESCRIPTION	PICTURE
Platelet ice	Thin layers of ice that build up under sea ice near ice shelves. Made of sea water.	
Sea ice	Ice that forms on top of the ocean as it gets cold enough to freeze. Made of sea water.	
Ice shelf	A massive amount of ice that has flowed off the land and now floats on the ocean. Made of fresh water.	
Iceberg	A huge block of ice that has broken off an ice shelf or glacier. Made of fresh water.	
Ice sheet	A massive area of ice that covers land. Made of fresh water.	
Pancake ice	Round, icy slushy shapes that form as the sea starts to freeze on the surface. Made of sea water.	
Glacier	A river of ice that is flowing over land. Made of fresh water.	

Activity - English / Drama

NZ Curriculum Strand: English / Drama

Drama - Understanding drama in context

Junior - Levels 1-2:

- Demonstrate an awareness that drama serves a variety of purposes in their lives and in their communities.

Classroom Discussion:

- What did enjoy about Chilled?
- Which character did you like the most? Why?
- What did you learn?
- What might be useful to you in your own life?
- Create some characters for a sequel to Chilled … fill out the table with your own cast!

NZ Curriculum Strand: English / Drama

English - Processes and Strategies
Senior - Level 3-4:

- creates a range of texts by integrating sources of information and processing strategies with developing confidence.

Write Your Own Antarctic Adventure Story!

Here's a fun way to incorporate Science into English and Drama. Use the student's favourite Antarctic Animal and create a story (or a play!) about it.

The story could be inspired by Chilled, or by another Antarctic adventure. Or use imagination and create wonderful adventures!

Think about what sort of characters could be in your story (you could use your characters from the table above or create some more).

Now write what happens in your story (this is the plot). You could use this suggested story structure as a guide:

1. Introduction
2. Find a problem
3. The problem gets worse!
4. Solve the problem (the resolution)
5. Conclusion

Write a Story About Your Favourite Animal!

A Day in the life of a…

- Select an Antarctic animal.
- Research it's life cycle, environment, what it looks like and what it likes to eat.
- Think about how to describe your animal.
- What does it do? What obstacles might get in it's way?
- List some scientific facts about your animal.
- Now using your imagination, what might happen to this animal during a day?
- Write a story about "A Day In the Life of … " *your animal*!

Activity - Health / PE

NZ Curriculum Strand: Health / Physical Education
Junior - Level 1:

- B2 - Participate in and create a variety of games and activities and discuss the enjoyment that these activities can bring to them and others.
- C2 - Identity, sensitivity, and respect: Demonstrate respect through sharing and cooperation in groups.
- C3 - Interpersonal skills: Express their ideas, needs, wants, and feelings appropriately and listen sensitively to other people and affirm them.

Junior - Level 2:

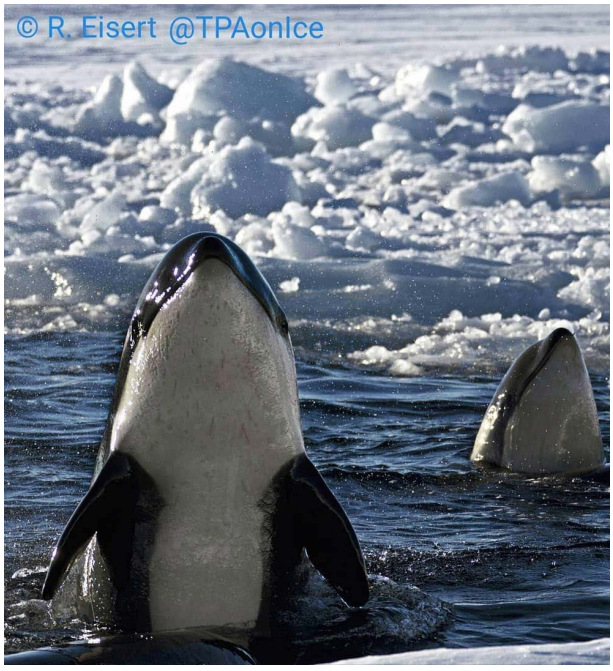
- B1 - Movement skills
- B3 - Science and technology: Develop a wide range of movement skills, using a variety of equipment and play environments.
- B2 Positive attitudes
- B4 Challenges and social and cultural factor: Participate in a range of games and activities and identify the factors that make participation safe and enjoyable.

Spy Hopping (Grandma's Footsteps)

Search on Youtube for Killer Whales spy hopping to see how they do this in the wild! Then play the game.

Based on the sneaking up game "Grandma's Footsteps", students select one student to be the Killer Whale (or Orca), and everyone else are Emperor Penguins. The aim of the game is to sneak up and reach the penguin egg to keep it safe from the cold and not get caught by the Killer Whale!

The "Killer Whale" is at the end of the room, with a "penguin egg" (use a tennis ball) behind them. The "penguins" are on the "ice shelf" at the other end of the room. The Killer Whale crouches down facing away from the penguins. When they pop up and turn around (spy hopping) the rest of the class must freeze. Anyone seen moving must go back to the ice shelf. The first penguin to reach the egg wins, and becomes the next killer whale or Orca!



Activity - Social Sciences

NZ Curriculum Strand: Social Studies
Junior - Levels 1-2

- Understand that people have different roles and responsibilities as part of their participation in groups.
- Understand how the past is important to people.
- Understand how people make choices to meet their needs and wants.

Shackleton's Team

Explore the Antarctic Heritage Trust's website - www.nzaht.org

In the play *Chilled*, Earnest Shackleton's Hut was where Chip hid out during the storm on his way to the South Pole. In reality, Shackleton's "Nimrod" Hut is just a few hours away by Hagglund, on the northern side of Scott Base. See if you can find the real Shackleton's Hut on a map.

Look at the photographs of Shackleton's Hut from the Conserve part of the the Antarctic Heritage Trust's website: https://nzaht.org/conserve/explorer-bases/shackletons-hut/

Find the photographs of some of the men on the expedition and find out what they did.

See if you can find -

- A doctor
- A scientist
- A leader

Discuss in a group -
If you were going on a ship for a whole year - who would you want to take with you? What skills might they have that would be useful?

Hillary's Team
Have a look at Sir Edmund Hillary's team. What roles did some of his team have?

Discuss in a group -
What was different between the Shackleton and Hillary expedition? (Consider the technology that had changed! Tractors vs dog sleds!).

What remains of each trip? (Discuss how the huts have been preserved).

How did their expeditions affect future expeditions to Antarctica? (Hillary's camp became the Scott Base that is used today).

Activity - Social Sciences

NZ Curriculum Strand: Social Studies
Senior - Levels 3-4

- Understand how people remember and record the past in different ways.
- Understand how the ways in which leadership of groups is acquired and exercised have consequences for communities and societies.

Create an Explorers Diary Entry!

- Research Shackleton, Scott or Hillary's expeditions to Antarctica.
- Imagine you are a scientist on the expedition with them.
- Create a diary entry and include the weather, what you had to eat, and what you did that day in history!

Shackleton Quotes

Earnest Shackleton was renowned for being an astounding leader who brought his team safely home after incredible feats of endurance. Here are a few of his famous quotes:

Discuss these quotes in groups:

- What might they mean to you today?
- Can you put them in other words?
- What sort of person do you think Shackleton might have been?

Climate Change

The subject of Climate Change can be woven into any of the activities included in this resource pack. Challenge your students to think about impacts on the environment locally and globally.

For example:

- Discuss the habitat of the Adelie penguins as you draw them
- Discuss measuring the size of Antarctica - how much do we know about the land under the ice? How do we know how big the continent actually is?
- Where do Killer Whales travel during the year? Do they follow ocean currents?

Antarctica is an incredible place to study climate change because it is the most pristine environment on earth, and also has major effects on global weather patterns and ocean currents.

Consider the impact of any human activity in Antarctica on the environment. Every scientific expedition to Antarctica must include rigorous environmental impact policies. Every flight or boat trip to Antarctica requires fossil fuels to get there… how do the New Zealand and Australian governments minimise the carbon footprint of working and studying in Antarctica?

Check out https://www.antarcticanz.govt.nz/environment to find out how New Zealand manages it's policies.

Check out http://www.antarctica.gov.au/environment to find out how Australia manages it's policies.

You could discuss with your students:

- What is a carbon footprint?
- What is your own carbon footprint?
- Why is it important to understand our impact on the world?

Empower students to ask questions, and build their knowledge. By understanding our impacts, we can help to mitigate our impacts, and make good choices when we can!

The New Zealand Ministry of Education has recently released new resources, as part of the New Zealand Curriculum. We love what they have done! There are plenty of activities to engage your students, and it all links back to the same messages that we have included in *Chilled*. While it is aimed at the more senior students (Curriculum Level 4) many of the activities could be adapted for younger students.

Check out the Teacher Resource PDF here!

https://nzcurriculum.tki.org.nz/Curriculum-resources/Education-for-sustainability/Tools-and-resources

Further Resources

There are lots of incredible resources available online. Here are some of our favourite sites:

The International Antarctic Centre
www.iceberg.co.nz/our-experiences/antarctic-academy-programmes/

Antarctica New Zealand
www.antarcticanz.govt.nz/education

LEARNZ Virtual Field Trips
http://www.learnz.org.nz/antarctica154/resources

The Antarctic Heritage Trust
https://nzaht.org/

The Australian Antarctic Division
http://www.antarctica.gov.au/about-antarctica/education-resources

Classroom Antarctica
https://classroom.antarctica.gov.au/

Cool Antarctica
www.coolantarctica.com

New Zealand Science Teacher
www.nzscienceteacher.co.nz/science-education-society/to-the-ice

Science Learning Hub
https://www.sciencelearn.org.nz/resources/328-antarctica-literacy-learning-links

Elanti Media teaching resources
These are develope especially by the writers of Chilled, to accompany the play, and will be available from http://www.elantimedia.com/education at the end of term one.

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