Oven to Freezer:

A Study of Deserts

Year One Topic

Creative ideas to support thinking, planning and knowledge

Rachel Jacobs

Focussing on Australian and Antarctic Deserts

Leading Children

VANQUIS Banking Group

Contents & Introduction

This document is part of a set of FREE topic based resources that I have produced in response to requests for creative ideas to support teachers' delivery of themes. We would like to take this opportunity to thank Vanquis Bank for their support to make this happen.

For a general introduction to our planning materials and how to use them, please refer to our General Introduction document that can be found in the Resource Hub at leadingchildren.com

Whether you are dipping in and out for the odd idea here and there, or using the whole document, our materials are there to support your thinking, planning and knowledge.

You will find a spider diagram that outlines my initial thinking in terms of what could be covered by the topic. I have then selected a few areas of potential study to plan in detail.

It is imperative, even when we teach very young children, that we have a plethora of knowledge and resource to share with them, so I have included some essential background information and key vocabulary on the topic.

There are ideas and suggestions for enhanced provision (for indoors and outdoors).

Numerous Talking/Reading/Writing opportunities have also been included.

It is not intended that this document is printed. We suggest you cut and paste any of the ideas you like into your own planning. If you prefer, paper copies are available (£4.95 to cover the cost of printing) at the base or in the shop.

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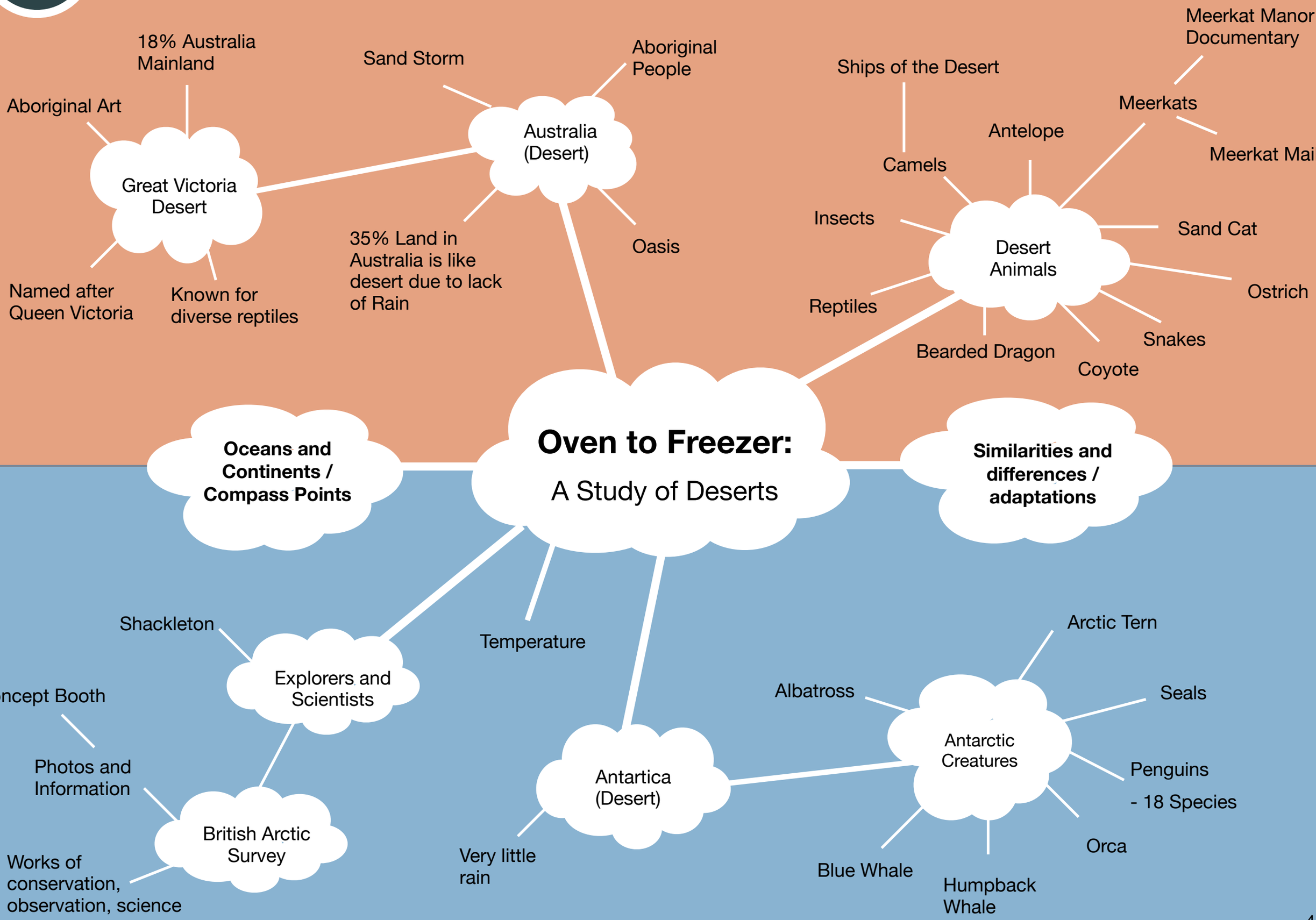
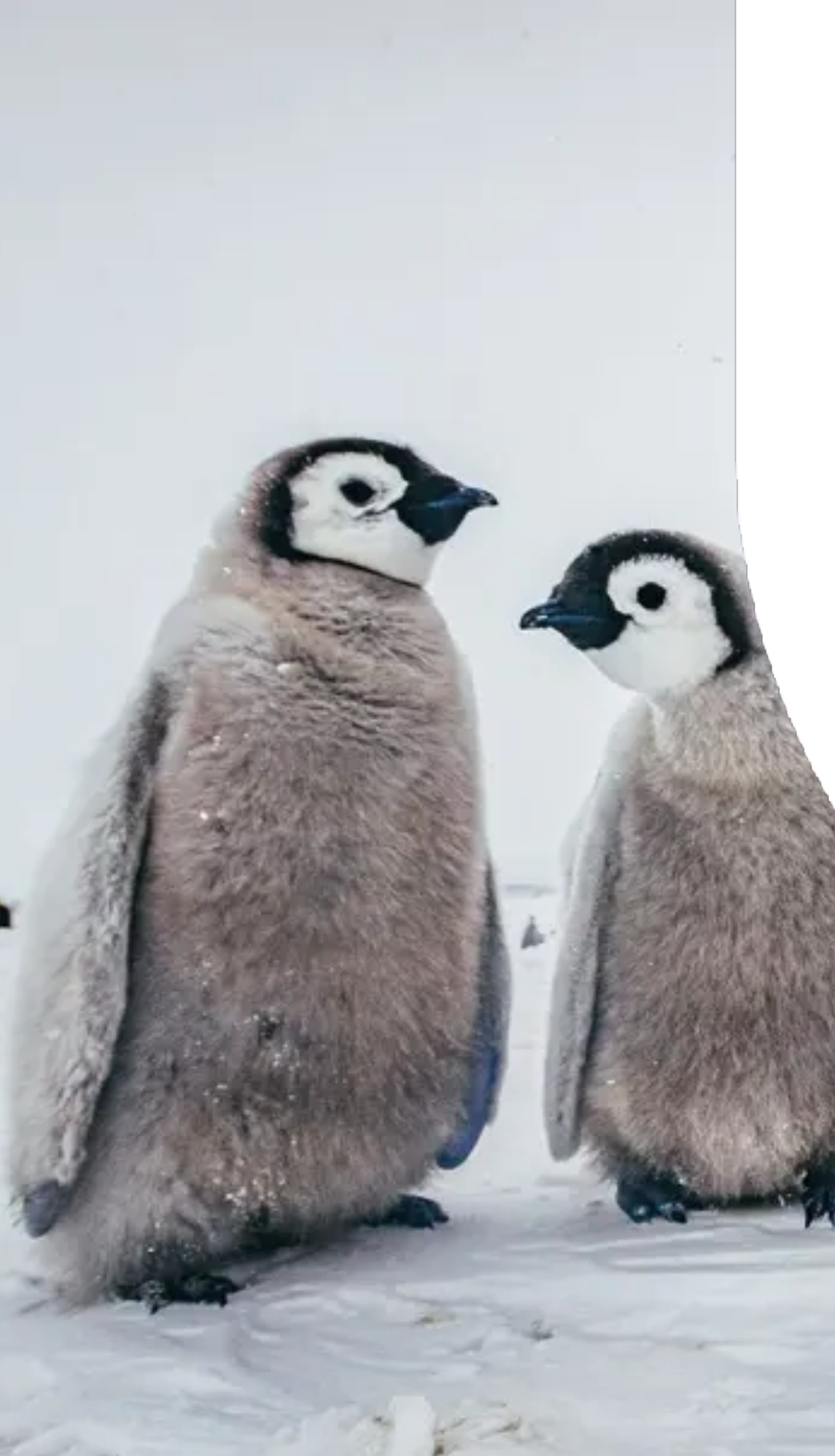
Section 1

Brainstorm of Topics

1 Brainstorm of Topics





Section 2

Teacher Knowledge & Background Information

2 Teacher Knowledge and Background Information

Introduction & Background Information

This topic can be delivered over a half or full term. It looks at contrasting deserts, their climates, creatures, habitats, locations.

The Antarctic is, in fact, a desert and the main focus of this topic. We will study Antarctic creatures in order to discover how they have adapted to their habitat and study the contrast in climates. This study will also aid children's understanding of oceans and continents, compass readings and a plethora of other information about other things.

We have included information about the Australian Desert as a contrast.

"Lost and Found" and "Meerkat Mail" are our key fictional texts.

We have split the topic into two sections: The first few weeks are on the desert of the Antarctic and the next couple of weeks on the Victorian Desert, Australia. We suggest spending the last few days looking into the contrasts between the two.

Compass Points

See the following film: https://www.youtube.com/watch?v=ibLedhew2r0

I wouldn't have many things painted on a playground, but compass points would definitely be one of them!

Teach compass points with a globe so children can see in 3D that the North Pole is North, South Pole is South and East is as far from the East as the West is the West.

Play outdoors with routes and compasses. Start at the …door, take 3 paces north, 5 paces west and 9 paces south. Which tree do you reach?

With some children using an Arial Google Earth Map, others an OS map and others with compasses, do a mystery tour around school, until you reach one of the children's houses or local landmark.

Have compasses to lend to families for the weekend and ask them to pace a local walk or car ride. Have them in the playground for treasure hunts. The more the children play with and use them, the better.

2 Teacher Knowledge and Background Information

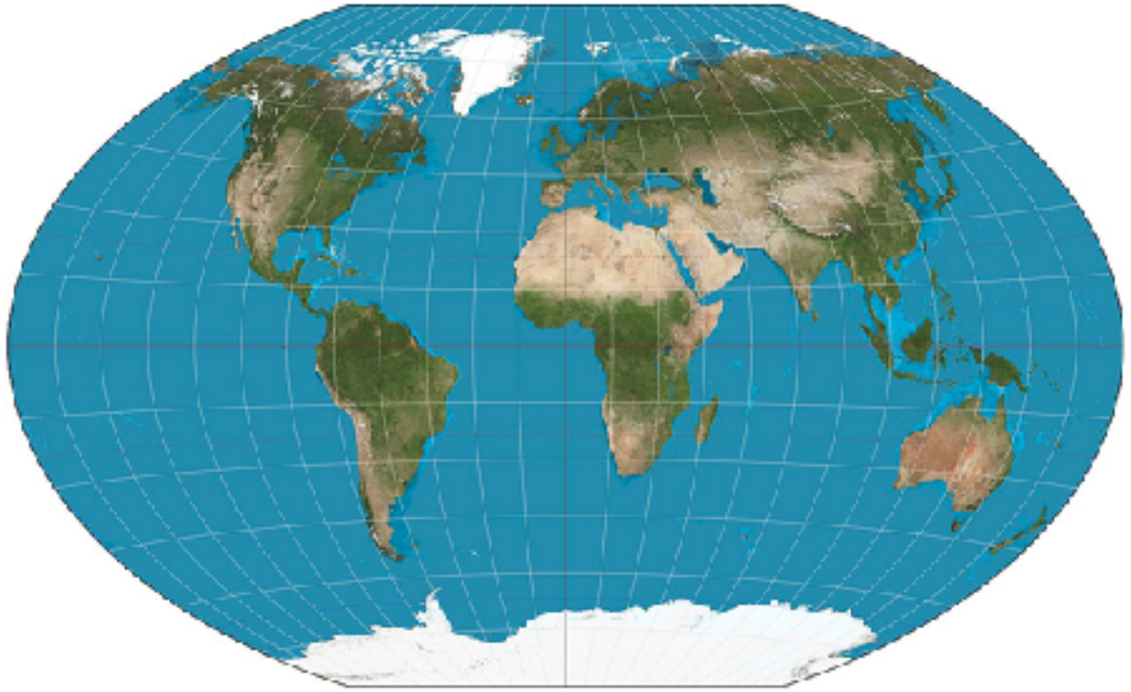
Continents

A continent is a large continuous mass of land conventionally regarded as a collective region. There are seven continents (listed from largest to smallest in size):

- Asia
- Africa
- North America
- South America
- Antarctica (Approximately 62 countries the size of the UK could fit into Antarctica)
- Europe
- Australia
    - Sometimes Europe and Asia are considered one continent called Eurasia.

Together, the continents make up about 148 million square kilometres of land.

This video shows a way to remember the names of the continents - https://youtu.be/rCYERpZ4Ujc



Oceans

People who have viewed Earth from space have described it as a "blue marble." This, of course, is because three-quarters of it is covered in water.

Our planet sustains life, partially thanks to the 321,003,271 cubic miles (1,338,000,002 cubic kilometers) of salt water that continually circulates around and between the comparatively small bits of exposed land.

Humans have gotten into the habit of separating the one big, continuous, mysterious body of water that covers the globe into sectors that we call oceans.

Historically, there were just four oceans, but we now recognize five different oceans: the Pacific, Atlantic, Arctic, Indian and Southern Oceans.

The Pacific, Atlantic and Indian Oceans freeze together around Antarctica

2 Teacher Knowledge and Background Information

This song helps to name the oceans -

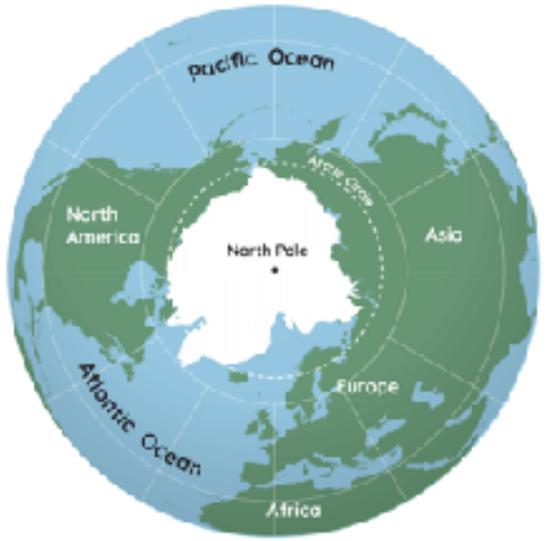
https://www.youtube.com/watch?v=9rzKt9bUIQg

As surrounded by water as we are, it's strange that we know so little about the world's oceans. For instance:

- we have yet to map over 85 percent of the ocean floor to the same resolution we've mapped the surface of Venus
- we've only discovered about a third of the marine life lurking in the world's oceans
- we can't account for most of the trillions of tons of plastic that's ended up in the our oceans

The Poles

The Earth has 2 Poles. One pole is in the north and the other is in the south. Winter is long in the poles and it is dark.



The North Pole is in the **Arctic**. It is a very cold habitat. Ice caps the ocean. Polar bears live in the North Pole.

Indigenous people such as Inuits live in the regions around the North Pole

The South Pole is called **Antarctica**. It's ice tops the land. Penguins live here and keep warm with their thousands of tiny feathers and thousands of friends to huddle up with.

Only Researchers live in the South Pole during parts of the year.

2 Teacher Knowledge and Background Information

Deserts

When most people picture a desert they see a hot and sandy landscape. They might also see one or two palm trees dotted around, and a camel … In reality, only about 20% of the world's desert is covered in sand…

A desert is defined by the amount of precipitation (rain, snow, mist and fog) in an area.

A region that receives very little precipitation (the exact amount depends on who you ask) is classified as a desert.

There are many types of deserts, including subtropical, coastal and polar deserts.

What they all have in common is a barren, windswept landscape, which makes it difficult for plants and animals alike to gain a foothold on land.

Few plants grow in deserts, and the animals that live in these regions often have special adaptations to cope with the harsh climate. With little or no vegetation, deserts are left unprotected from the winds (and ice in Antarctica), leaving large, featureless expanses of land.

The World's Five Biggest Deserts

1. Antarctic Desert Area: 14,200,000 km² (5,500,000 mi²)
2. Arctic Desert Area: 13,900,000 km² (5,400,000 mi²)
3. Sahara Desert Area: 9,100,000 km² (3,500,000 mi²)
4. Arabian Desert Area: 2,600,000 km² (1,000,000 mi²)
5. Gobi Desert Area: 1,300,000 km² (500,000 mi²)

Polar Deserts

A polar desert is an area that has precipitation of less than 25 cm (9.84 in) each year, and an average temperature of under 10 °C during its warmest month.

The Earth's polar deserts cover almost 5,000,000 km² (1,930,500 mi²). Much of the interior of Antarctica is a polar desert.

This calm video is great for background music/images of Antartica - https://youtu.be/slujRh4g6lw

Hot Deserts

The largest hot desert in the world is the Sahara. It covers an area of 9.4 square kilometers and spans 12 North African countries. The Sahara is considered the hottest place on earth. Average temperatures range between 40 and 47°C.

This film explains about the desert eco-system in Dubai - https://www.google.com/search?client=safari&sca_esv=590380016&rls=en&tbm=vid&q=what+is+a+desert+bbc+bitesize&sa=X&ved=2ahUKEwif2eOY6IyDAxUnQUEAHeEgAKEQ8ccDegQIMxAH&biw=1440&bih=734&dpr=2#fpstate=ive&vld=cid:ad90baa0,vid:2QdlF6Ld1oc,st:0

2 Background Information - Polar Desert

Antartica

Antarctica is the driest continent on earth, it is almost entirely desert. Very little snow or rain falls on this continent, but because it is so cold, the small amount of rain that does fall, does not melt.

There are no countries in Antarctica; the continent is governed by an international treaty (The Antarctic Treaty).

No-one lives in the South Pole on a permanent basis, but about 1000 people work there for a few months per year. They go for the winter season and live in the various research stations.

The largest of Antarctic's ice shelves (floating tongues of ice) is the Ross Ice shelf. It is several hundred metres thick. The nearly vertical ice front to the open sea is more than 600 kilometres long, and between 15 and 50 metres high above the water surface. Ninety percent of the floating ice, however, is below the water surface.

There are no trees or shrubs on Antarctica and only two species of flowering plants are found on some of Antarctica's surrounding islands.

Antarctica – Factfile

- Lowest Temperature recorded:-128.6F/-89.2C
- Strongest hurricanes: 199mph/327Km/h
- Ice can be up to 2.5 miles, or 4km thick
- 67% of the world's freshwater reserves are in the Antarctic, frozen solid!
- Penguins live in the Antarctic, Polar bears do not!
- The ice layer floating around the Antarctic (floating ice) is called pack ice, which can be as deep as 9.8' or 3m thick in winter.
- Only Icebreakers (ships with specially designed hulls) can work in Antarctic waters in the winter. The average water temperature is 28F or -2c
- The most prolific creature in Antarctica is Krill, which is what whales, seals, penguins and fish feed upon.
- Winter: Dark 24hrs per day
- Whale Species in the Antarctic: Killer, Humpback, Sperm, Finback, Blue and Antarctic Minke Whale
- Seals in the Antarctic: Weddell, Leopard, Ross, Crabeater, Sea Lion, Southern Elephant Seal
- Penguins: Gentoo, Emperor, Macaroni, King, Chinstrap, Adelie
- What is being researched in Antarctica?: atmosphere, palaeontologists are studying fossils and the different plants and creatures that used to live in Antarctic, glaciologists measure the movement of ice/glaciers.
- Dangers to Antarctica: Global warming, climate, melting ice, pollution, mining/oil production, over fishing

2 Background Information - Polar Desert

Ice Breakers

An icebreaker is a special-purpose ship or boat designed to move and navigate through ice-covered waters. They are ‘ice-strengthened’.

A ship may break its way through ice by forcing it aside if the ice is thin or loose pack, if the ice is very thick the ship rides up and over the ice in front of it, which it breaks with its weight, this may happen with continuous progress or can result in a lot of back-and-forth in particularly difficult areas.

Characteristics of Ice Breakers

- **Heavy for their size,** to make them more effective at breaking through ice when they are pushed up above it by their engines
- **Gradual upwards slope at the bow,** particularly at the water line to allow the bow to ride up over ice before the weight breaks it
- Hull made from special steels designed for optimum strength at low temperatures
- **Air bubbling systems to assist ice-breaking.** Air is forced under pressure from 2m or so below the water line where ice is met, helping to break it and move it out of the way
- Heated water jets below the waterline to help when breaking through ice
- **Ability to rapidly move large amounts of water ballast within the ship** to shift the weight when needing to break ice. The ships can be rocked from side to side in this manner
- **Hull divided by bulkheads** into a series of watertight compartments in case it is holed
- **Extra thick steel at the bow,** also at the stern and at the waterline
- An **"ice horn"** to protect the rudder and propeller when in reverse, and an **"ice knife"** in front to protect it when in forwards motion
- **Electric propulsion to the propellers.** Electric motors can apply torque when not actually turning or when only turning slowly, so the propeller hitting a large piece of ice will not stop the engine
- **Extra strong propellers with replaceable blades.** There may also be a propeller inspection well to examine them in operation and the facility to change blades while at sea
- **Very powerful engines.** The engine may be diesel possibly with extra power supplied by gas turbines for ice breaking or even be nuclear powered
- **Powerful searchlights** for use in dark winter conditions

Useful Short Films about Antarctica

https://www.youtube.com/watch?v=WqnQo3DgEoo&t=291s

Take a 4-Minute Escape to the Blissful Serenity of Antarctica

https://www.youtube.com/watch?v=ydFZdu98oVc

Antarctica for Kids and Schools

2 Background Information - Polar Desert

Southern Lights

https://www.youtube.com/watch?v=ArQDuTNGM2Y

This video shows a spectacular aurora australis (Southern Lights) light show that brightened up the night sky above China's Zhongshan Research Station in Antarctica. The green polar lights swirled and undulated, throwing light across the ice-covered ground.

To help children grasp the content of this film and to understand the phenomena that is the Northern or Southern Lights, children will need to learn the below words and definitions. Playing with magnets and magnetic shavings will help:

Aurora Australis - Southern Lights (at the south pole)

Aurora Borealis - The Northern Lights

Phenomena - A remarkable person or thing

Northern Hemisphere - The half of the earth that is north of the equator

Equator - An imaginary line halfway between the north and south poles

Altitude - a distance measurement, usually in the 'up' or vertical position between one point and another

North/ South pole - The North Pole is at the northernmost point of the Earth, while the South Pole is at the Southernmost point of the Earth. The poles are very cold, but the equator is very warm

Energy particle - Light is actually energy made of small particles called photons

Magnetic field - A magnetic field is the region, or space, around a magnetic material or charge within which the force of magnetism acts

Electro Magnetic force - This occurs between any two charged particles with opposite charges and repulsion between particles with the same charge, while magnetism is an interaction that occurs exclusively between charged particles in relative motion

Gases - Air is the most common example of a gas. Air is also a mixture of numerous gases, including nitrogen, oxygen, hydrogen, water vapour and trace amounts of other substances like argon, neon and krypton

Oxygen - What our bodies breathe to keep us alive. Our lungs take in oxygen and breathe out carbon dioxide and nitrogen

Nitrogen - A gas (we breathe it out)

Spectacle - A visually striking performance or display

Mesmerising - To capture someone's complete attention

Infrared - A type of energy, invisible to human eyes, that special machines can use to measure infrared light, or how much radiation, or heat is coming from an object

Atmosphere - An atmosphere is made of layers of gases surrounding a planet. Earth's atmosphere is composed of roughly 78% nitrogen, 21% oxygen, and 1% other gases

Bucket list - A list of experiences or achievements that a person hopes to have or accomplish during their lifetime

Particle - A minute portion of matter – a, 'tiny particle of dust'

2 Background Information - Polar Desert

The British Antarctic Survey

Rothera is Britain's largest Antarctic research station, where approx. 100 people live and work.

https://www.bas.ac.uk/polar-operations/sites-and-facilities/facility/rothera/

It is fascinating to learn about the jobs these people do and the climate they live in.

The Antacrctic Survey Team 2024

2 Background Information - Polar Desert

The British Antarctic Survey

Then and now

2 Background Information - Polar Desert

Animals found in the South Pole / Antarctic

Key facts can be found on the following page

Wandering Albatross

Orca (Killer Whale)

Emperor Penguin

Blue Whale

Elephant Seal

Hourglass Dolphin

Skua Bird

Useful films about some of the Antarctic animals

Penguins Go MONTHS Without Feeding! | Wild Bites | BBC Earth Kids (youtube.com)

A Blue Whale's Tongue Weighs More Than An ELEPHANT! | Wild Bites | BBC Earth Kids (youtube.com)

2 Background Information - Polar Desert

Animals found in the South Pole / Antarctic (cold desert)

Animal	Food Source	Facts
Penguin (Emperor)	Emperor penguins eat mainly fish in Antarctica, krill and squid.	The males sit on the eggs to protect them for months and do not eat at all throughout this time, but just sit and wait and protect their egg (later the chick) until their mate comes back to relieve them. They survive by huddling together for warmth. They also take it in turns to occupy the coldest most exposed outside positions. Without this huddling behaviour, they would unable to endure the cold conditions.
Orcas (Killer whale)	Fish and squid, seals, sea birds and even whale species far bigger than themselves.	Orcas are at the top of the food chain and can prey on other whale species more than twice their size. Even though orcas are also known as killer whales, they are the largest member of the dolphin family. Orcas measure 5.5 - 9.8 metres in length (females are usually smaller than males) and they weigh up to 5,500 kg.
Elephant Seal	Squid, fish, rays, octopuses, eels, small sharks, krill, shrimps and crabs.	They can dive to as deep as 2388m and stay underwater for over 1 hour. Male elephant seals weigh as much as a small truck. Can weigh up to 4.5 tonnes.
Wandering Albatross	They mainly eat fish, including toothfish, squid, and crustacean.	They have an 11-foot wingspan. Their huge size lets them glide for hours without the need to land or, in some cases, flap their wings. The birds have adapted to life in Antarctica with their ability to drink seawater and excrete excess salt from their body from tubes along the side of their beaks.
Hourglass Dolphin	Small fish species, crustaceans as well as squid and shrimp.	Hourglass dolphins are known for bow riding (leaping through waves) in front of ships and whales. Hourglass dolphins are named after the distinct, hourglass-shaped white markings on their sides.
Blue Whale	The primary diet of blue whales is krill—tiny shrimp-like animals.	The Blue Whale is the largest mammal on the earth. The blue whale can grow to 87 feet and weigh up to 330,000 pounds. They are loud animals with calls louder than jet engines.
Skua Birds	A lot of people love to hate, Skuas mainly because their diet includes baby penguins (caution viewers!).	Here's a three-minute montage of these fascinating birds loitering around penguin colonies on the Antarctic Peninsula over the summer months - https://youtu.be/yjwhvJ4qDBk

2 Background Information - Polar Desert

Animals found in the <u>North</u> Pole / Arctic – Many people get confused about creatures in the poles so we have included this list of animals from the North Pole for you to help children distinguish between the two.

Animal	Food Source	Facts
Polar Bear	Seals, seaweed, rodents, berries and carcasses	One seal can provide them with 8 days worth of energy. Polar bears have black skin under their glistening white coat, which helps them soak up the sun and keep warm.
Seal	Fish, squid, crustaceans (crab, lobster, shrimp) and seabirds.	They can swim up to speeds of 20 miles per hour. There are approximately 33 species of seals worldwide. Seals can be found in both the Arctic and Antarctic regions.
Arctic Fox	These animals are opportunistic foragers and eat almost everything including berries, eggs of birds, small mammals, fish, carcasses of large mammals.	During prey scarcity, arctic foxes will sometimes follow polar bears on their hunting trip to scavenge on any remaining scraps left by the bear. Their fur changes colours with the seasons. Arctic foxes never have to hibernate due to their ability to adapt to their surroundings. (eg growing more hair over winter).
Dall Sheep	Plants: grasses and mosses	They have gorgeous curving horns that grow for up to eight years. These horns are formed of the same substance that makes up our fingernails.
Snowy Owl	Small animals like rabbits, lemmings, rats, and arctic hare, as well as birds and fish.	As there are no trees in the Arctic, snowy owls perch on rocks to hunt. Most owls sleep during the day and hunt at night, but the snowy owl is active during the day, especially in the summer. Snowy Owls can fly at speeds up to 50 mph.
Wolverine	Birds, eggs, rodents, mice, and other small mammals in the summer, but when the ground is covered in snow in the winter, they turn to hunt bigger animals like reindeer (caribou) and sheep.	To warn others of its presence, a wolverine will release a strong-smelling fluid called musk. Wolverines do not chase or stalk prey. Instead, they usually lie hidden in the trees or behind rocks and then pounce on their prey.






2 Background Information - Polar Desert

Adaptations made by Animals in the Antarctic Desert

Many of the animals living in Antarctica have outer layers of dense fur or water-repellent feathers. Under this fur or feather layer is a thick layer of insulating fat. Many marine animals have large eyes to help them spot prey and predators in the dark waters.

Penguins

- Have heavy, solid bones. These act like a diver's weight belt, allowing them to stay underwater
- Paddle-like flippers to help them to swim very fast and efficiently
- Short wedge-shaped tail to support balance on land and to use as a rudder in the water
- Strong legs with webbed feet for swimming quickly
- The powerful bill is mainly used to catch food such as fish and squid. It is also used to preen feathers and to defend themselves from predators or other birds. The mouth and tongue are lined with backward pointing spines to hold the slippery fish until it is swallowed whole
- Special feathers. Penguins have many feathers to keep them warm in the sea by providing a waterproof insulating layer. Two layers of short, stiff and hooked feathers lock together, trapping a layer of air between the skin and the feathers. Underneath the outer feathers is a layer of down. Preening helps keep the feathers clean and well oiled. There is an oil gland at the tip of the tail – the bill is used to spread the oil through the feathers
- Blubber. Penguins have a layer of blubber, or fat, under the skin to help keep them warm
- Salt glands. These are located just above the bill between the eyes. They remove the salt from seawater and fish, which is then excreted from the bill

Seals

Because of their thick layer of blubber and fur, Antarctica seals are extremely well-adapted to the freezing conditions and actually often find the conditions too hot, having to take plunges into the water to cool down. Seals are carnivorous and, depending on the type of seal, eat fish, krill or squid.

Each have teeth, whiskers and thick fur, similar to the coat of a dog. Instead of having layers of fat like other seals, fur seals rely on their thick coat for warmth. Adult males can weigh up to 200 kg, adult females weigh about 40 kg, and pups weigh between 3–7 kg at birth.

How do seals stay warm? Antarctic seals are great at staying warm, with thick blubber and fur keeping them cosy in the coldest temperatures. Blubber is an amazing insulator, not only providing a warm layer of fat to ward off the cold, but also controlling the flow of blood to the skin.

Blubber

Seals, penguins and whales have a thick layer of insulating fatty (adipose) tissue called blubber. Blubber is more than just a layer of fat. It contains blood vessels, which help regulate the flow of blood to the skin.

2 Background Information - Great Victoria & Hot Deserts

Great Victoria Desert

The largest desert in Australia is named the Great Victoria Desert by the explorer Ernest Giles in 1875.

It has been inhabited for over 600 generations by Indigenous people called Aboriginals.

The terrain in Australia's deserts and Outback varies from rocky areas, salt lakes, vast sandy areas and grassy plains.

The annual monsoon season allows for lush vegetation to grow in areas of the outback and desert. Monsoons can happen any time between November and April – Australia's summer.

Over 150 indigenous languages are spoken across the Australian central belt.

Although not indigenous to the area, Camels were introduced to Australia to help build the railroads and there are now over 1 million camels in the wild lands of Australia.

Indigenous People

In international law, 'Indigenous' acknowledges that a person's ancestors lived on particular lands, before new people arrived and became dominant.

Indigenous Peoples have their own unique customs and cultures, and often face difficult realities such as having their land taken away, and being treated as second-class citizens.

The **Pila Nguru**, often referred to in English as the **Spinifex people**, live in the Queen Victoria Desert. - https://www.pilanguru.org/

Desert Temperatures

Temperature extremes are a characteristic of most deserts. In some deserts, temperatures rise so high that people are at risk of dehydration and even death. At night, these areas cool quickly because they lack the insulation provided by humidity and clouds. Temperatures can drop to 4°C (40°F) or lower.

2 Background Information - Great Victoria & Hot Deserts

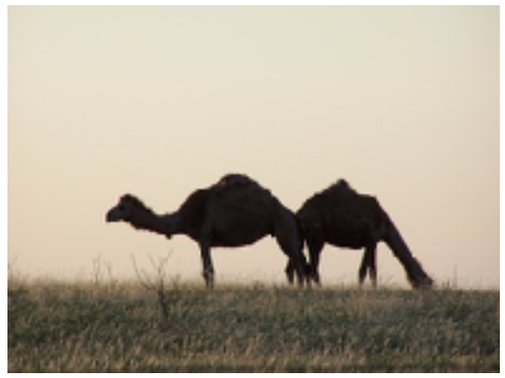
Animals found in Great Victoria Desert – key facts can be found on the following page

Bandy Snake

Dingoes

Emu's

Parrots



Camels (feral)

Bilbies

Kangaroo

Rock Wallabies

2 Background Information - Great Victoria & Hot Deserts

Animals found in the Great Victoria Desert

Animal	Food Source	Facts
Bandy Snake	Small realities and amphibians Lizards, skinks and small frogs	Snakes swallow their prey whole. Their jaw structure allows them to consume prey much larger than their own head. Bandy snakes are burrowers and spend a lot of time underground
Rock Wallabies	Grasses, leaves and shrubs	They carry their babies in a pouch, similarly to kangaroos. Rock-wallabies can hop up almost vertical rock walls. They love rocky outcrops and cliffs, especially ones with caves and cracks to hide in
Parrots	They feed on mostly grass seeds	The two most common type of parrots that are found in the Great Victoria are the scarlet chested parrots and the princess parrot. They can survive without access to drinking water and meet their fluid requirement from plants
Camels	A variety of plants, including grasses, shrubs, and trees	Camels are very mobile animals journeying over 70 kilometers a day. They can double in population every 9 years. Since camels are mostly found in India, these are the feral (wild) camels in the world. A camel can go without water and food for a month, but when they are thirsty, it can drink more than 30 gallons of water in just a few minutes!
Bilbies	They eat fruit, insects, and bulbs	A bilby looks very much like a mouse with rabbit ears. They are nocturnal animals. They may have legs very similar to a kangaroo's, but instead of hopping they tend to gallop their way around. They are also part of the marsupial family. (They carry their babies in a pouch.)
Emu’s	Leaves, grasses, fruits, flowers, and insects	Emus can go without food for 2 months. Emus can run at 50km per hour. An Emu has a low deep voice that can be likened to a hollow drum. They can also grunt and whistle
Dingoes	They eat a variety of animals, including kangaroos, wallabies, rats and lizards. They also scavenge dead animals and eat plants and fruit	The dingo is a primitive dog. Dingoes are pack animals that live in groups of about ten, but young males are often solitary
Kangaroo	Grasses, shrubs, and herbs	They can hop to speeds of 40mph. They use their strong tail as a third leg for support while standing

2 Background Information - Great Victoria & Hot Deserts

Examples of Animals found in other Hot Deserts – key facts can be found on the following page

Dromedary Camels

Saharan Cheetah

Gobi Bear

Gobi Jerboa

Scorpion

Desert-horned Lizard

Boa Snake

Arabian Oryx

Desert Hedgehog

Meerkat

Other Animals found in hot deserts

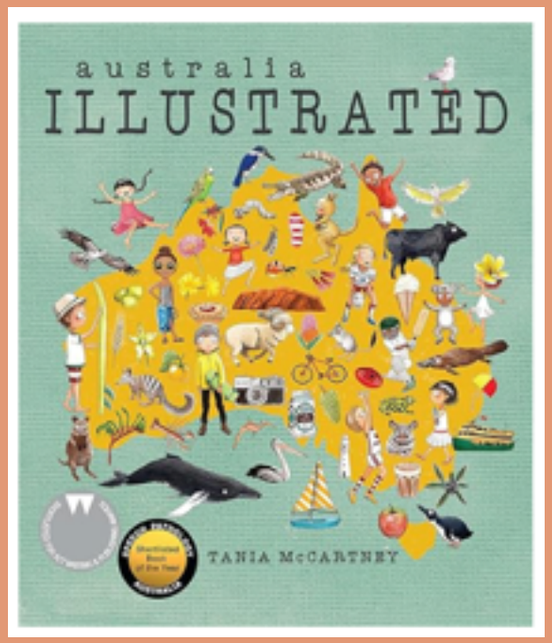
Animal	Food Source	Facts
Dromedary Camels	Plants such as grasses, bushes, leaves and shrubs	Found in the Sahara. This species of camel has only one hump on their back instead of two. Camels can close their nostrils to keep sand out during a sandstorm
Saharan Cheetah	Antelopes (addax and gazelles) hares	Found in the Sahara. Saharan cheetahs can reach speeds of 70mph. Only about 250 mature adults of this critically endangered species survive today
Scorpions	Insects: spiders, crickets, beetles, ants Larger scorpions also feed on small lizards or mice	Found in the Sahara. Some scorpions become fluorescent and glow under ultraviolet light. Scorpions have their skeleton on the outside of their bodies that helps protect them from predators
Gobi Bear	Grasses, roots, berries, insects, small mammals and carrion (carcus)	Found in Gobi. These are the only bears that have adapted to living in both hot and cold desert climates. Gobi bears are the rarest species in the world with only 30 individuals left in the wild
Gobi Jerboa	Insects and vegetation such as seeds, grasses and desert plants	They are known for their jumping ability and can reach 3 meters in a single leap. Gobi jerboa are primarily nocturnal and spend their days in burrows to avoid the scorching heat. They have large ears to detect their predators
Arabian Oryx	Grasses, herbs and desert vegetation	Their white coat helps reflect the harsh desert sun. The Arabian oryx have long straight horns that can reach up to 85cm in length. Oryx dig depressions in the ground with their front hooves, so they can lie in cooler sand, which provides some protection against fierce desert winds
Arabian Sand Boa	Small mammals such as mice, rats, lizards and birds	They have a stout body and short tail so they can burrow and hide in the sand. They are nocturnal hunters, relying on their sense of smell to locate their prey. Unlike many other snake species, they give birth to live young instead of laying eggs
Desert hedgehog	Their diet consists of bugs, small invertebrates, frogs, eggs of ground-nesting birds, snakes, and scorpions	Hedgehogs will sleep all day, as long as 18 hours. Unlike European hedgehogs, desert hedgehogs are not known to hibernate. These hedgehogs have a high tolerance for snake and bug venoms, protecting them when looking for venomous or stinging prey
Desert-horned Lizard	They prey primarily on invertebrates, such as ants, beetles & flies	They are well camouflaged in their surroundings, and body colour can be beige, tan, brown, slightly reddish to match the rocky soils found in the desert. They are very flat-bodied with rough looking horns and bumps on their body
Meerkat	Both plants and animals. Such as beetles, spiders, and scorpions as well as fruits and seeds	Meerkats live in groups called mobs or gangs. These can consist of up to 40 individuals. Meerkats are known for their teamwork and cooperative behaviour. When foraging or keeping watch for predators they take turns and rotate roles

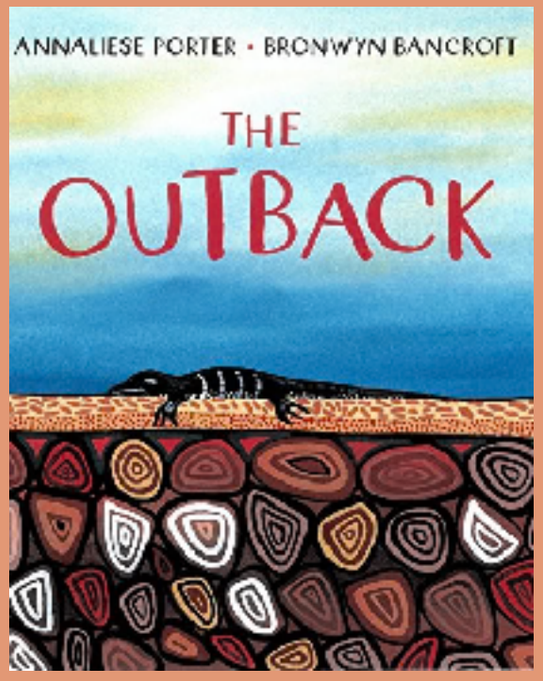
2 Background Information - Great Victoria & Hot Deserts

Adaptations of Animals in a Hot Desert

- Animals such as kangaroo rats found in the desert never drink water. They can concentrate their urine to conserve water
- Desert lizards bask in sun and burrow in the sand (afternoon) to escape the heat of the day
- These adaptations prevent the loss of water in desert animals
- Meerkats have dark eyes to cut down the sun's glare. They live in deep burrows which are cooler, the further they are from the surface
- Many animals sleep in the day and hunt at night once the sun goes down and it is cool
- Bactrian camels have thicker woolly coats in winter and shed their fur in the hot summer. They can store fat in their humps, which they can convert into energy and water if they haven't drunk for a long time. However, when they do manage to top up with water they can drink over 30 gallons in a few minutes
- They and other creatures have long eyelashes which can close, to shield their eyes from sand storms. Their nostrils do the same. They also have massive feet pads so they can manage the shifting sand easily, even with heavy loads

Useful Books





Section 3

Word Lists

3 Word Lists - Hot Deserts

Young children can apparently learn up to approximately 20 new words per day, so it is imperative, especially for those who have such a limited vocabulary, to learn lots of new provision and topic words as they arise. It is therefore important for you to use these words in conversation and through using books, experiences and images as you work with them.

Now if you are a little bit like me, I usually have a very good knowledge of many words, but for some, I have only an inkling as to their definition. Children need us to have crisp definitions for words so they can understand them quickly.

On the next pages, we have offered definitions for words we think you might need a crisp definition for, though of course, we know you know what they mean! Though many words have many different meanings, we have used the definition, in this section, that links closest to the topic/ theme.

Air pressure	Forces that push and pull, which happen all around us, in the air we breathe. Different forces cause different weather
Archaeologist	Person who studies ancient people by digging up buildings, structures and things from long ago
Artefacts	Old object made by a person. They tell us about life in a particular time in the past
Continent	Any of the worlds' big land areas: Africa, Antarctica, Asia, Australia, Europe, North America, South America
Crops	A cultivated plant that is grown on a large scale commercially (cereal, fruit, or vegetable)
Nomad	A member of a people that travels from place to place to find fresh pasture for its animals and has no permanent home
Deforestation	The action of clearing a wide area of trees
Oasis	A fertile spot in a desert, where water is found
Precipitation	The liquid and solid water particles that fall from clouds and reach the ground are known as precipitation. These particles include drizzle, rain, snow, snow pellets, ice crystals, and hail that falls to or condenses on the ground
Settlement	A place, typically one which has previously been uninhabited, where people establish a community
Veil	A versatile cover and an elegant accent (hooded scarf, shawl, head wrap, face cover). People wear it all day as shade from the hot sun or in the evening as it cools
Well	A well is a structure created in the ground by digging, driving, or drilling to access liquid resources, usually water. Desert wells are built of sandstone blocks and slabs with a water source inside
Adaptation	The process of change by which an organism or species becomes better suited to its environment

3 Word Lists - Hot Deserts

Dune	A mound or ridge of sand or other loose sediment formed by the wind, especially on the sea coast or in a desert
Cactus Cacti	A succulent plant with a thick fleshy stem which typically bears spines, lacks leaves, and has brightly coloured flowers
Extreme	Extreme weather is when a weather event is significantly different from the average or usual weather pattern
Nocturnal	Done/Occurring or active at night
Meerkat	A small southern African mongoose
Mongoose	A small carnivorous mammal with a long body and tail and a grizzled or banded coat, native to Africa and Asia They are generally terrestrial mammals, but some are semi-aquatic, and others are at home in the treetops
Scorpion	A terrestrial arachnid with pincers similar to those of a lobster and a venomous sting at the end of its jointed tail, which it can hold curved over its back. Most kinds live in tropical and subtropical areas
Outback	The remote and usually uninhabited inland districts of Australia
Air pressure	The air around you has weight, and it presses against everything it touches. That pressure is called atmospheric pressure, or air pressure. It is the force exerted on a surface by the air above it as gravity pulls it to Earth
Sandstorm	A strong wind carrying clouds of sand with it
Mirage	An optical illusion caused by atmospheric conditions, especially the appearance of a sheet of water in a desert or on a hot road caused by the refraction of light from the sky by heated air
Conserve	To protect (something, especially something of environmental or cultural importance) from harm or destruction
Sahara Desert	The Sahara Desert is the world's largest hot, non-polar desert and is in North Africa
Gobi Desert	The Gobi Desert is a large, cold desert and grassland region in northern China and southern Mongolia. The Gobi gets its name from Mongolian gobi, meaning “waterless place.”
Arabian Desert	The Arabian Desert is a vast desert wilderness in West Asia that occupies almost the entire Arabian Peninsula. With an area of about 2,300,000 square kilometres, it is the largest desert region on the continent and the second-largest on Earth

3 Word Lists - The Polar Desert

Southern Lights	A spectacular, colourful display of light commonly seen in the night sky in the southern hemisphere, e.g. Antarctica
Antarctic Circle	The Arctic Circle is a line of latitude, which is an imaginary horizontal line around the Earth. The lands and ocean south of the Arctic Circle is called the Antarctic
Global Warming	Global warming is the long-term warming of the planet's overall temperature. This can be seen at the Earth's poles with the mountain glaciers and ice sheets melting, resulting in a rise in sea levels
Climate	The weather conditions prevailing in an area in general or over a long period
Antarctica	Antarctica is Earth's southernmost and least-populated continent situated south of the Antarctic Circle and surrounded by the Southern Ocean, it contains the geographic South Pole
Southern Ocean	The Southern Ocean, also known as the Antarctic Ocean
Ice	Frozen water, a brittle transparent solid. Formed on lakes, rivers and the ocean in cold weather
Snow	Snow is formed when temperatures are low and there is moisture in the atmosphere in the form of tiny ice crystals. Clumps of these ice crystals are called snowflakes
Exploration	The action of exploring an unfamiliar area. Polar exploration is the exploration of the lands around the North and South poles
Blizzards	A severe snowstorm with high winds and low visibility
Glaciers	A slowly moving mass or river of ice formed by the accumulation and compaction of snow on mountains or near the poles
Research Stations	Also known as Antarctic bases, or ice stations. They research systems such as ecosystems, geology as well as ocean and climate systems
Icebergs	A large floating mass of ice detached from a glacier or ice sheet and carried out to sea
Penguin	Penguins are a group of aquatic flightless birds that live in the south pole
Orca	Another term for killer whale, although part of the dolphin family. Orcas are at the top of the food chain
Antarctic Desert	Desert in the south pole. Despite its snow and ice coverings, it is regarded as a desert because the mean annual precipitation it receives averages only about 50 mm
Arctic Desert	The Arctic is a cold desert (in the north pole) because it gets very little precipitation (rain or snow) - about the same amount as the Sahara - but it is so cold that the snow that does fall doesn't melt, so deep snow covers the land and ice

As I proposed earlier, I would spend more time on Antarctica than Australia, then use the last few days of the term to look at comparing the two climates.

I have considered using the Antarctic enhancements for the first few weeks and the sand/Australian Desert ideas for the last couple of weeks.

Section 4

Indoor Classroom Plan for Enhanced Provision

4 Indoor Enhanced Provision

Water Area - The Polar Desert

- If you have room for a water tray, then it would probably best serve as a large, ‘small world station’ for your Antarctic scenarios
- If you can, use blue water (coloured with food colouring or Brusho) to depict the sea and a use a silver metal or enamel bowl for land mass
- In the water tray on snowy days you could use actual snow plus some ice from the freezer. If you freeze water in large plastic bowls or margarine cartons they tend to last longer in a warm classroom than small cubes. You could perhaps substitute them with some plastic fake cubes. If you don’t have a water tray, use a large plastic storage box (the shallow ones) on a table
- The children will be interested in hunting and the hunted to start with, so make sure you have plenty of stones or ice ridges, ice shelves in the water and so on for animals to hide behind, float upon and escape large predators. The more they learn about the habitats, creatures, their activities and information, the richer their play
- The human elements in all of this come with the inclusion of Scientists. Scientists will observe the ice, the weather, rocks temperatures and the creatures. Perhaps your Small World station could become the centre of experimentation, observation and learning in the classroom? Check out the website for the British Arctic Survey for ideas

Design Technology Area

Insulation and waterproofing are very important to people living in cold places. How do animals insulate themselves? They either lay down layers of fat and blubber or have undercoats of fur and feathers which they can sometimes shed in the warmer months. Baby penguins are fluffy and need to keep dry because their feathers are not yet waterproof.

- Could you make a home for an English Pet dog who is going out to live in the North Pole for a spell? How could you insulate the box to keep him warm in arctic conditions? How could you test the temperature before and after?
- Some of the early explorers to Antarctica struggled because their wooden boats got stuck in sea ice and were crushed and broken up by it. How do modern day ice boats cope with these issues? How have they been adapted?

4 Indoor Enhanced Provision - The Polar Desert

Role Play Area

- I would create a science observation station such as the British Arctic Survey. A simple ‘cabin’ with kitchen area, bed and desk will suffice. See the Concept Booth TM materials for ideas of the types of reading and writing that might be possible (page 59). Add ‘windows’ with views over the sea, mountains, penguins on a huddle and whales coming out of the sea
- Learn about the people who live in the coldest parts of the earth
  - How We Shower and Do Laundry at -71°C (-95°F) | Yakutia, Siberia - https://youtu.be/n1TI2udDBI4
  - One Day in the Coldest Village on Earth –71°C (–95°F) | Yakutia, Siberia - https://youtu.be/lj5GXZaE7qs

Block Play

- Make sure you have the accessories you need for blocks, especially if you also have small world areas
- You may need to borrow additional arctic animals to your accessories so the play and learning can continue to link and connect. Do you have lots of fake ice?
- If the children make a zoo for the polar and desert animals, encourage them to write information for each enclosure and make sure they have plenty of card, masking tape and scissors to make their own posters, signposts and information cards

Small World

- In a dry small world tray I tend to use dishwasher salt with some snowflake table confetti mixed in to create snow
- Alternatively you can make a small world scene with fake ice and foil gift wrap (white with snowflake design)

4 Indoor Enhanced Provision - The Polar Desert

Snack Area

- Use unusual or shocking photographs to generate talk and to practice new vocabulary
- If children eat snack together, have some questions ready for Talk Partners to discuss

4 Indoor Enhanced Provision - The Polar Desert

Small Construction Area

- Challenges and provocations could be to make snow machines and ski machines. Have a look at the Arctic Survey materials to see how their scientists get around in the frozen tundra
- Have you ever watched Life Below Zero? This documentary/Series follows the lives of people living near the North Pole – watching them hunt, get around, use huskies, fly tiny planes, use skidoos and so on It's incredibly interesting and the stories are told in bitesize bits so you can show short clips easily
- Out in the middle of nowhere, people have few mechanics to rely upon, so they have to learn how to fix things themselves

Music Area

- Does your school have an instrument that makes a glistening sound? Can you find glistening sounds online?
  - It is a lovely sound to close your eyes to and begin to imagine, as you think about snow falling and the glistening light it brings
- Cheryl E Leonard created a series of musical compositions inspired by environments and ecosystems on the Antarctic Peninsula. Can you recreate any of the sounds?
  - This link tells you all about the project - https://allwaysnorth.com/project/antarctica-music-from-the-ice/
  - This one shows you how they used natural materials to make some of the sounds - https://www.youtube.com/watch?v=wnsFDbAMwvM&list=OLAK5uy_mVVe0xOBUYBlAg2puPWa0p8y6yss83arY
  - And this shows you the end result - https://www.youtube.com/watch?v=wnsFDbAMwvM

4 Indoor Enhanced Provision - The Polar Desert

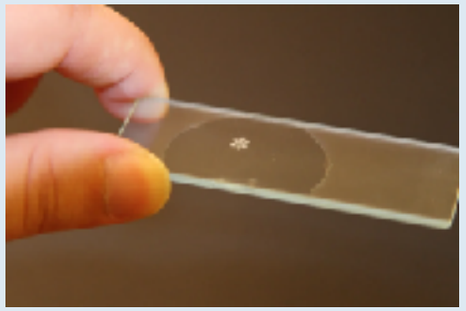
Investigation Area

- There are all sorts of experiments you can do with snowflakes, capturing snowflakes and seeing them under a microscopes. Getting used to using temperature gauges, rainfall gauge and compass direction
- Most importantly, show the children film footage, photographs and content of the British Antarctic Survey. The following Website and films are invaluable and fascinating - https://www.bas.ac.uk/

How wonderful would this be as a backdrop to an area?

Simply hang cotton wool from fishing wire to make falling snow.

How to preserve a snowflake

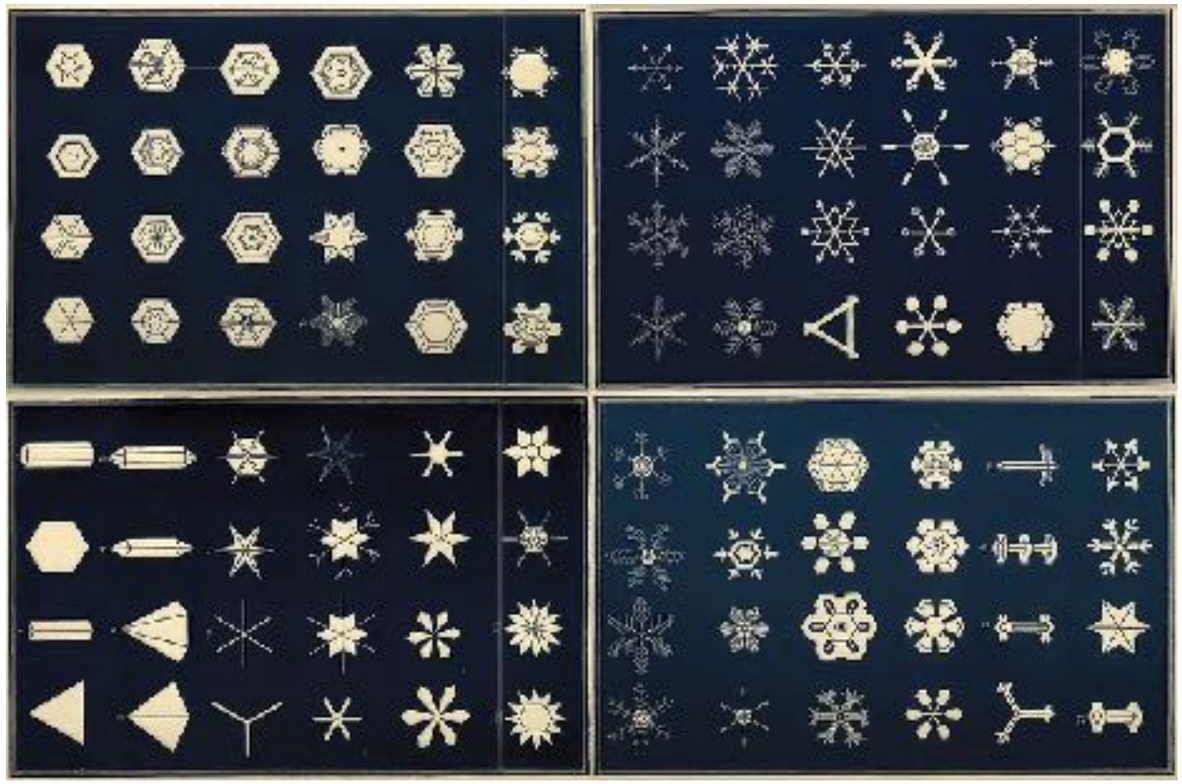


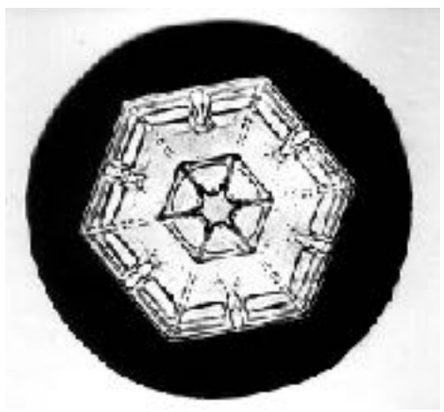
- If you happen to have a microscope and microscope slides, try preserving snowflakes
- All you really need for this activity are the slides, but using a microscope is a fun bonus
- Prepare in advance by placing a couple of slides in the freezer so that they won't melt the snowflakes. You will also need hairspray or artists' fixative. Keep these items in a cold area like your refrigerator or an unheated garage
- When it is time to collect and preserve snowflakes, bring out the slides, the hairspray, and a couple of toothpicks
- Spray one side of the slides with the hairspray
- Catch the snowflakes on the sticky side of the microscope slides, using a toothpick to gently move the snowflake to centre it, if needed
- Place the slide with the snowflake in a cold area where no more snowflakes will fall on it, such as inside a covered box or in a shed
- Leave the slide untouched for several hours so that the hairspray can dry and the water in the snowflake will disappear
- You now have the imprint of a snowflake on a slide you can study with the naked eye or a microscope

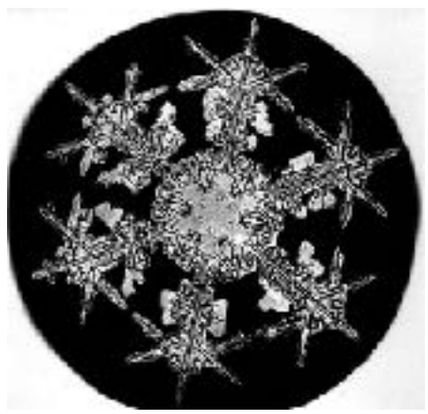
4 Indoor Enhanced Provision - The Polar Desert

Art Area

- There are many craft ideas to choose from when it comes to snowflakes.
- Be careful not to instigate an all for one and one for all situation, where you have 30 of a similar thing. Show different ways and allow the children to choose their own, too
- One way of having children exploring the shapes of snowflakes is to put out some photographic examples with some black sugar paper cut into different sized circles and squares. Ask the children to choose to use white paper, paint, charcoal, white or silver pen, string, PVA glue, glitter, or sharp white pencil crayon
- They should also be able to choose the colour and shaped paper they want to use. Have some circles and hexagonal shaped paper ready, especially in dark colours







4 Indoor Enhanced Provision - Hot Deserts

Sand Area / Small World Scenario

- I would add old dried twigs, thistles and the like for a desert scene
- You might want to add a succulent and cactus, first warning the children not to touch
- Every classroom should have an aloe vera plant for its medicinal values to cuts and grazes on the skin and they propagate so prolifically, the children could easily grow offshoots to give a plant to other classes
- Recently I have been experimenting with succulents and how easy it is to grow new plants from leaves – you could literally grow hundreds in a season
- Camels, people, meerkats, snakes and lizards are all at home in the desert, as are other creatures such as lions and kangaroos, depending where in the world the desert is
- Can you make tunnels like a meerkat in damp sand? Make sure there is plenty of sand in the sandbox for this to prevent frustrations! Use a kitchen roll inner tube to support tunnel building if necessary
- See the teacher background notes on Deserts

4 Indoor Enhanced Provision - Hot Deserts

Block Play

- Make sure you have the accessories you need for blocks, especially if you also have small world areas
- You may need to borrow additional desert creatures to your accessories so the play and learning can continue to link and connect
- If the children make a zoo for desert animals, encourage them to write information for each enclosure and make sure they have plenty of card, masking tape and scissors to make their own posters, signposts and information cards
- Sand paper makes good flooring in block play

Home Corner

- I would turn my home corner into a Bedouin tent for the desert
- Take the furniture out, and swap for rugs and floor cushions, a cooking pot and fire at the entrance and surround it with sand/sand dune wall paper
- Hook children in by teaching them about life on the move for Beduin Tribespeople and their nomadic way of life

4 Indoor Enhanced Provision - Hot Deserts

Small Construction

- Can you research and make a sand, or dune buggy?
- How have they been adapted to work in hot deserts?
- What would you want your buggy to have as adaptations and what must it be able to carry lots of?

Snack Area

- Use unusual or shocking photographs to generate talk and to practice new vocabulary
- If children eat snack together, have some questions ready for Talk Partners to discuss

4 Indoor Enhanced Provision - Hot Deserts

Art Area

- Patterns in fur and on scales seem to be the most obvious choice as we get to know the desert creatures and their camouflage or survival tactics
- Have photographs and books about desert animals but please refrain from offering colouring in sheets. These undermine a child's confidence and ability to draw
- Offer chalk and oil pastels as well as paint for these pictures

Design Technology Area

- How could you support a creature trying to survive in the desert?
  - What do they need?
  - Could you make a fan turn by making a circuit that hooks up to a small solar powered generator?

Investigation Area

- https://youtu.be/vbA8PGTeBHY - film about a meerkat family
- https://youtu.be/6a-UsoS4BV4 - film about the adaptability of animals in the wild – first part concentrates on the deserts

Section 5

Outdoor Classroom Plan for Continuous Provision

5 Outdoor Provision - Antartica & Polar Deserts

Water

- Can you freeze water outside and use it in children's play?
- If it is too warm, out, freeze water in plastic tubs, buckets and rubber cake moulds in a deep freezer
- You can make decorative ice bowls by putting water in a large bowl and pressing a smaller bowl into it, weighting it with a brick. Adding leaves and petals to the water will give your decorative ice bowl a whole new dimension
- You can do the same using trays, to make a sheet of decorative glass, which will stay frozen for a while propped up on the sill outside your window
- Otherwise, using small yoghurt pots with white or invisible thread, you can fix streams of frozen cylinders to a couple of metal coat hangers to produce a lovely outdoor chandelier

5 Outdoor Provision - Antartica & Polar Deserts

Make an Iceberg

- Fill a container with water and freeze it
- Once frozen, place it into a see-through plastic box
- Place the ice block into the water
  - How much of the iceberg sits under the sea? Why is this? Is this how real icebergs behave?
  - How long does it take the ice to melt? How can you speed up or slow down this process?
  - What happens to the water level once the ice is melted?
  - What happens to the ice and the water level if you do this experiment on a sunny day compared to a cold day?
  - How can you make this test fair?

Den Building

- It would be good to have a go at an igloo, but I'm not sure a school would be open if we had that much snow!
- Making an igloo out of hundreds of milk cartons is very doable, but you need somewhere to store them while you collect enough of them
- Top Tip: put them through your dishwasher to sterilize them!
- This video shows the instructions how to make a DIY Igloo - https://www.youtube.com/watch?v=_y6U-D4LuKs
- Garden canes and newspaper / white sheets are a good alternative to milk crates. Crates and fury rugs are good for inside the igloo, for making seats and beds

5 Outdoor Provision - Antartica & Polar Deserts

Games

- Hide and seek games help children to feel the thrill of the chase, the dread of being caught.
- What if you were a seal hunted by a few orca, wanting to make a meal out of you?
- Can you balance a ball on your 2 feet and move about like a penguin?
- Can you pass a ball on your two feet to someone else, just like a Father penguin passes a chick to its Mum?

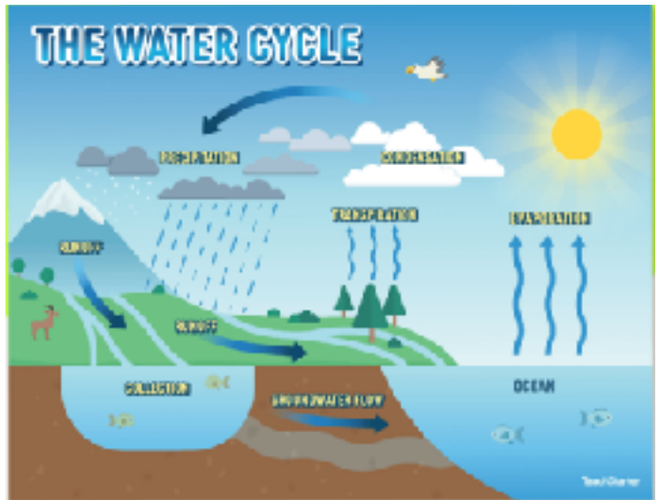
Music

- Could you invest in one of these lamps and have the children compose some music or choose excerpts from other composers to go with it?
- The Southern Lights are a fantastic thing to study and amazing to watch.
- Projecting them onto a white sheet inside an igloo den would be a magical experience.
- The science behind it might be a little harder to explain! See my notes in the background materials.
- https://www.youtube.com/watch?v=WL9EOfzoSsA

5 Outdoor Provision - Antartica & Polar Deserts

Investigation

- Discover temperatures with regard to freezing and melting points.
  - For example if water has a lot of salt added to it, does it take less or more time to freeze? Why?
- Understanding the water cycle – make one!
  - Take a plastic bowl with tall sides and place a mug in the middle of it
  - The sides of the mug must be shorter than the sides of the bowl
  - The bowl represents the sea and the mug a mountain
  - Carefully pour cold water into the bowl without getting any in the mug
  - Put cling film over the bowl and place the whole thing in the sunshine
  - Depending on the temperature, the sun will eventually give the water the energy it needs to change some of it into an invisible vapour – it will evaporate
  - When it touches the cling film, it will cool again and turn back into water, some of which will drip back into the sea and some into the cup, or mountain



Small World

- Outside you need to use larger small world animals if you can
- If not, try to contain them in an area or tuff spot
- If you have enough, you could house a colony of penguins on rocks or near the ‘sea line’

Role Play

- Have a weather station – your own British Survey to keep data on weather (rainfall, wind direction, snow, sun and wind
- Compare with the data coming from the poles
- You can buy all manor of weather stations at different price points. Stick to something very simple

5 Outdoor Provision - Antartica & Polar Deserts

Blocks/Construction

- Make a basic shelter from crates, ropes, covers and mats
- What could you use to make your shelter more effective? (Insulating it)

Reading

- Make a reading den from boxes to protect you from the weather
  - What do you need? Insulation, water proofing, warmth, protection from the sun?
  - Using huge cardboard boxes as a starting point, what could you use to adapt your den to make a comfortable, weatherproof den?
  - What can you learn from the Rothera scientists?

4 Outdoor Provision - Great Victoria & Hot Deserts

Sand Area

- If you have a sand pit outside make sure children have the tools they need to tunnel
- If you don't, a large see though box (84L) with sand in it up to about ¾ full could allow children to experience hollowing out a tunnel, just like meerkats and other desert creatures
- How can you make the sand more conducive to tunnel building? Add grit salt and water to give it some structure. The odd piece of carpet tube might help, too!

Construction / Den Building

- Build a den to shelter from the sun's harmful rays
- Use different materials, including bamboo stakes, newspaper and masking tape
- Measure the temperature to test which material works the best

Section 6

Talk, Reading, & Writing Ideas

6 Talk, Reading & Writing Opportunities

General

Please see our specialised vocabulary lists and add to them according to the specific resources and books you are going to use to ensure the basic vocabulary is covered for the different parts of the topic. We have also added a clarification list to accompany the teaching film on the Northern Lights due to the scientific nature of the content.

Shared Reading

Please consider using shared reading strategies when sharing books with children. The following are strategies which need to be taught and talked through each time you share a book or passage with children. You can use prediction, clarification of words, questioning and summarising.

Shared Reading Strategies

On the next pages, you will see separate guidance on shared reading notes for our core story and non-fiction text – Lost and Found and Ernest Shackleton. The same shared reading strategies can be used with any text - fiction or non-fiction: slowing down, clarifying unfamiliar words and phrases, predicting what might happen next or as a consequence, asking relevant and important questions then summarizing what you have read, all lead to much greater comprehension and retaining of facts.

Note: when you are clarifying an unfamiliar word, please don't just ask children to guess, or learn from one child who knows the word. Train them to use a plethora of different strategies to decode the text so that they will all be able to employ these strategies independently of you or their peers. These strategies need to practiced as you go through short passages of text, or you must model them when reading to the class. Our aim is to help every child become confident in tackling words they don't know independently.

Strategies for decoding unfamiliar words:

Context: Can I work out what the word means, due to its context within this sentence or short passage? Does it give me any clues?

Prefix or suffix – what do these tell me about the word? Example: transit – transition, transport, translucent, transparent… all words relating to moving, or moving through…

A proper noun – if a word starts with a capital letter in the middle of a sentence, then the word must relate to a name – the name of a person, place or organisation. Once I remember this, I can use context cues to work out which of these it is and then I have no need to be concerned with the word.

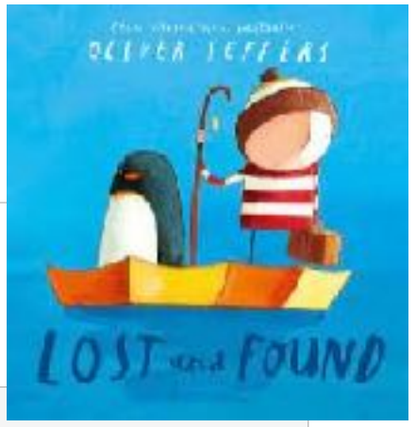
Picture what is going on in your mind's eye/imagination

Swap it for a different word – if the sentence still makes sense, you may have found part of its meaning.

Come back to the word later in case the passage helps you further on.

4 Talk, Reading & Writing Opportunities - The Polar Desert

Guidance Notes - Lost and Found - Written and Illustrated by Oliver Jeffries



Overview: A penguin turns up at the home of a little boy and follows him around. Concerned that the penguin looks sad, the boy constructs a scheme to get him back to the South Pole. Eventually they reach the pole but when he leaves the penguin there, it looks sadder than ever. On the way back home the boy realizes the penguin wasn't homesick – it was lonely, so he goes back for him.	
Reading Level:	Low/Middle ability
Prediction	Where do you think the penguin came from? How do you know? What do you think might happen to the boy and the penguin if they try to get all of the way to the South Pole in a little rowing boat? Why did the penguin look so sad when they reached the South Pole?
Key Questions:	What would you do if a penguin started to follow you everywhere?! Why did the penguin look sad? Why did the birds ignore the boy? What do you know about the South Pole? What would you like to know? I wonder how we could find out? What would you pack if you were going to the South Pole?
Words for clarification:	Penguin – aquatic birds with wings reduced to flippers, webbed feet Decided – the opposite of uncertain Ignored – to not notice or recognise Disappointment – upset or discouraged by the failure of ones hopes or expectations Discovered - to see, learn of, find, or find out; gain sight or knowledge of Harbour – a natural or manmade sheltered place for boats and ships Realized – to understand clearly Headed back – having a fixed place in your mind about where you are going Searched - to go or look through (a place or area) carefully in order to find something missing or lost:
Illustrations	How does the illustrator show how sad the penguin is? How does the illustrator trick you on the page where it begins, "There was no point telling stories…" What is your favourite illustration and why?
Summary	Can you summarise the story in a few sentences?

Guidance Notes - 'Ernest Shackleton' (First 5 pages) - Written by Maria Isabel Sanchez Vegara and Illustrated by Olivia

Overview: Talk about the endpapers. What do they depict? How do you know?

Ernest was the son of an Irish Doctor, who went to sea at age 16 in order to travel and see the world. His dream was to be the first to reach the south pole, but Roald Amundsen reached it first. Shackleton took a team of 28 men and 68 sled dogs and several pigs on a ship called Endurance, but after months of sailing , it got stuck on the ice, so they had to take the rowing boats and travel for a week until they reached Elephant Island. Shackleton then went off into the vast snowy wilderness to find a whaler's station to rescue his men. He was known for his optimism, enthusiasm, patience and courage.

Reading Level:	Middle/High ability
Prediction	Do you think Ernest will become an explorer? What did he do to prepare himself for his dream? Do you think many people will answer his advertisement? Would you?
Key Questions:	Why did so many people reply to his letter when he carefully spelled out the dangers? What makes people want to push themselves to go further than anyone else? How did the Endurance get stuck in the ice and then break up into pieces? How did the men survive as they waited for Shackleton to return? Why is working as a team more important than having experience?

Continued on next page

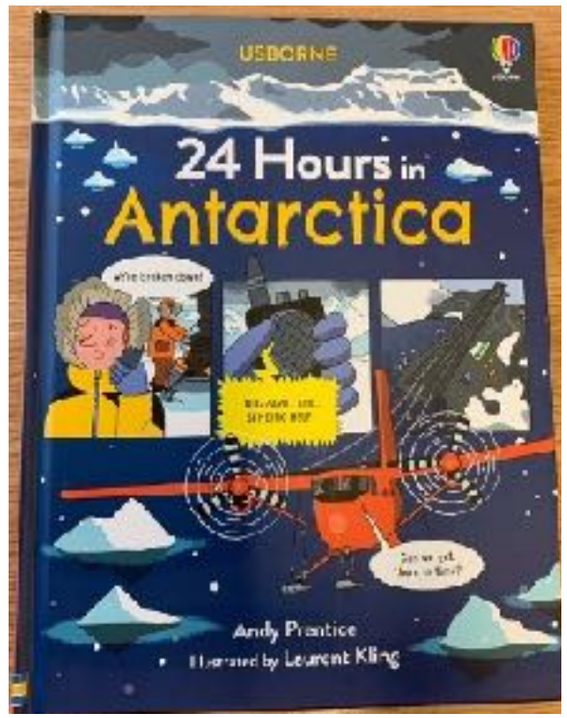
Guidance Notes - ‘Ernest Shackleton’ (First 5 pages) - Written by Maria Isabel Sanchez Vegara and Illustrated by Olivia Holden

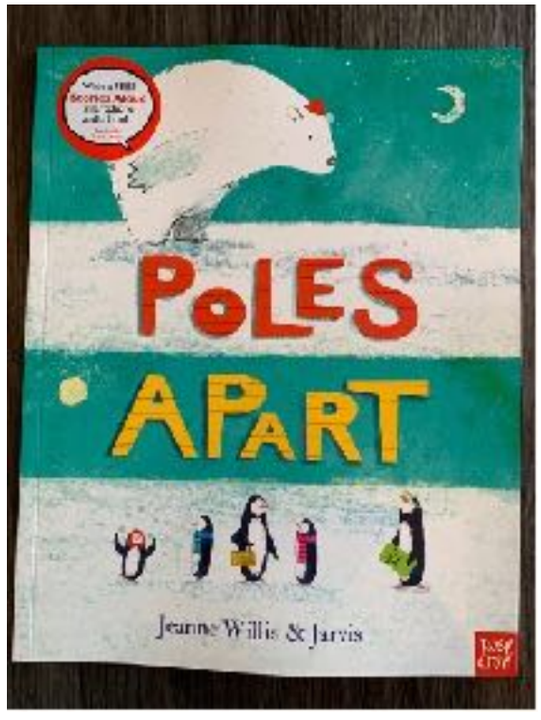
Words for clarification:	Irish – someone who was born in Ireland Dreamt – past tense of to dream Determined – having or showing great resolve to do or finish something Optimism – hopefulness and confidence about the future or the success of something Patience – a person’s ability to accept or tolerate delay Idealism – the view that the only reality is the ideal word Courage – confident person, not easily afraid or intimidated Merchant Navy – civilian (not army) fleet of ships bringing goods to a country Master Mariner – a seaman, or sailor who has qualified to be a captain of a merchant ship Expeditions – an important or long journey or the group of people who are taking on the journey Southernmost – the farthest south Norwegian -someone who was born in Norway Feat – a rare or difficult accomplishment Attempted – tried but this word is often used when failure is involved Advertisement – a public notice or recommendation for something Hazardous – risky, dangerous with a risk element Honour – public acknowledgement of someone with strong principles or who has achieved something of distinction Recognition – honour and attention for doing something great
Illustrations	What do you think of the style this illustrator has? What materials do you think the illustrator used to make her work?
Summary	Can you summarise this part of the story in a few sentences?

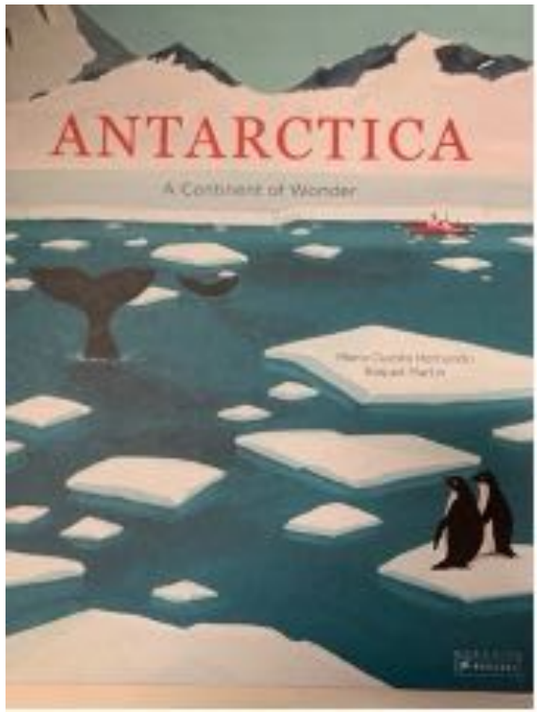
Additional Book Suggestions

24 Hours in Antartica

- This is the best book I have come across for teaching children about working in Antarctica at the British Antarctic Survey Station, Rothera.
- It follows Viv, an engineer at the station and her day to day living and working experiences in Antarctica.
- We get to know about her life in Rothera, her kit, emergency equipment, food rations, as she goes about her daily life. We meet many of her colleagues to find out about their job in Rothera and there is much information about the local wildlife and terrain
- The book is written in cartoon fashion with lots of interesting maps and illustrations.
- There is a glossary, index and the introductory page gives details of Usborne's Quicklinks, offering links to websites with associated films and information.
- Coupled with information from the British Antarctic Survey website, you will have lots of useful information to share. The photographs on the website are exquisite and the different articles and short films really arresting.
- Have a look at the virtual tours to start with – they are amazing. https://virtualrothera.bas.ac.uk
- At the front of the Usborne book, they offer links to websites on this topic. Go to Usborne.com/Quicklinks and type in the book title, '24 Hours in Antarctica.'



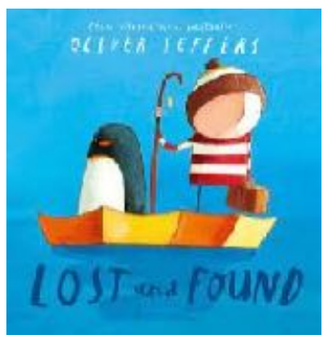




4 Talk, Reading & Writing Opportunities - The Polar Desert

Writing Ideas for Core Story - Lost and Found

- Somewhere, in a nook and cranny, you might like to place a brown suitcase, woolly hat and penguin hat, umbrella and torch.
- If they are placed near the block area, children might be tempted to make a boat. If you don't have blocks, then a few large cardboard boxes might do the trick! They can be used outdoors on a dry day if you have no space inside.
- Please make sure you have maps, an atlas and a globe on display and that you have already discussed the poles and that they have a good bit of knowledge about the Antarctic and Emperor Penguins.
- Start to read the story and stop when it comes to the part when they pack. Have a discussion about packing. We pack to make sure we have everything we need on our journey. But where will their journey take them?



Work out with the children which way would be best for them to go, setting off from England, to reach the South Pole. Look at websites to find out which way the British Survey Scientists go, showing via a dotted line on your enlarged map which way the little boy's boat might go. This is a fantastic opportunity to talk about compass points and the equator. When the boy and the penguin set off on their journey nearer the North Pole the weather may be quite cool, but as they approach the equator, it will get very hot, then cool again as they approach the South Pole.

Print in A3 and draw the route

This map shows the equator

Now we know their journey, we can help them to rethink their packing! They will certainly need more than an umbrella and a torch! What do the children think they should add and why? In talking partners, they should decide which 2 items they think are very important and after making a list and discussing the most important items like water (not sea water?), food (take it all or fish – what will the penguin do for food?) and phone (power and signal?), ask the children to draw each item on your list and place it into the suitcase. As they play, tell them, their imagination might bring up new ideas and they may need to pack additional things.

If you want to do some, 'away days', you could take the class on a few pretend journeys in the boat and stop off in France, Portugal, South America or Africa.

4 Talk, Reading & Writing Opportunities - The Polar Desert

For each day, I would go camping in some part of your school grounds. Talk about the food you will try (try to sweet talk your kitchen), give a little flavour of each country, play its music outside, watch films about each country and share facts and stories about it while out camping for the day. Each time, the children can write a postcard home, which contains as much information as they could possibly fit onto a postcard including a copy of the nation's stamp, through their drawing on the front as well as their writing on the back. Think about each country's national sport and language and try to engage a little in both. If you could possibly find someone to accompany you on your journeys who is actually from that nation, all the better, as they can tell you stories about their country as you travel or sit around the fire. If you were to visit Morocco there would be some fantastic art opportunities as well as discussion points from buildings etc.

The weather at sea is most unpredictable – what should the boy have packed for this? Could the children compose a piece of music and perhaps a joint piece of artwork to show a storm? First show a film about being in a boat during a storm so you can listen to the waves and wind. How could you emulate this sound using kitchen orchestra or real instruments?

https://youtu.be/i0gScT7rnME

https://youtu.be/AsD5u6k6dKI

The boy and the penguin will see lots of amazing wildlife on their journey, such as whales, sharks, octopus as well as lots of different types of weather. Could the children write a journal entry each to add to the collective class one, as if writing as the boy himself. Taking a diary entry each, with a different date, they can map his journey and think about what he encountered and who it felt at the time. Think about using clips from The Life of Pi, or The Blue Planet to see different phenomena, creatures, storms and weather. There are many clips on YouTube.

Arriving at the South Pole, what is it like there? What will the boy be dressed in? What is left in his suitcase? Look at the pictures of the penguin. He looks sadder than ever. What do the children think is wrong? How can we let people know we are sad?

On the way back, the story says that the boy tells the penguin lots of stories. Could you ask the children to write a story that could be part of a class anthology of stories to share with a penguin? What type of stories would the penguin like to hear, do you think? Why do you think the penguin would like to hear them?

Write the sequel – Lost and Found 2: The way home.
What adventures might the boy and his friend Penguin find themselves in before they reach British shores?

- In a storm?
- Boat tipped over by a whale?
- Oil slick and surrounded by flailing birds?
- A dolphin approaches tied up in netting, starving and bleeding
- A completely confused turtle
- A sad lady penguin in a boat with a little girl who is lost?

4 Talk, Reading & Writing Opportunities - The Polar Desert

Concept Booth - Antarctic Research Station

- Create a Concept Booth™ of an Antarctic Observation or science station. We based ours on Rothera - See https://www.bas.ac.uk/
- I have covered mine with plain white Christmas Wrapping paper with snowflakes on it on the outside.
- On the inside I have nautical maps, sunrise and sunset times, tidal times and charts to manage data on the weather, animal activity and ice. Children will play and learn from this resource the more facts they know.

4 Talk, Reading & Writing Opportunities - The Polar Desert

Role Play Jobs

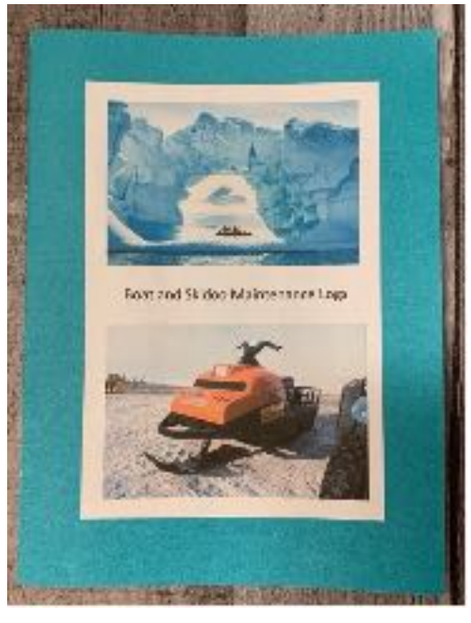
- We created ID staff cards for real members of staff at Rothera and made blank ones for children to complete with their own details.
- Children can role-play who is in the station and who is out ‘in the field’ doing the various jobs by putting their cards in and out of the rota board. The jobs we used are simplified versions of real jobs at Rothera:

  - Observing Skua Birds
  - Monitoring Plastic Pollution
  - Analysing Ice Change
  - Collecting Snow Samples
  - Counting Penguins
  - Recording Weather

4 Talk, Reading & Writing Opportunities - The Polar Desert

Create Booklets

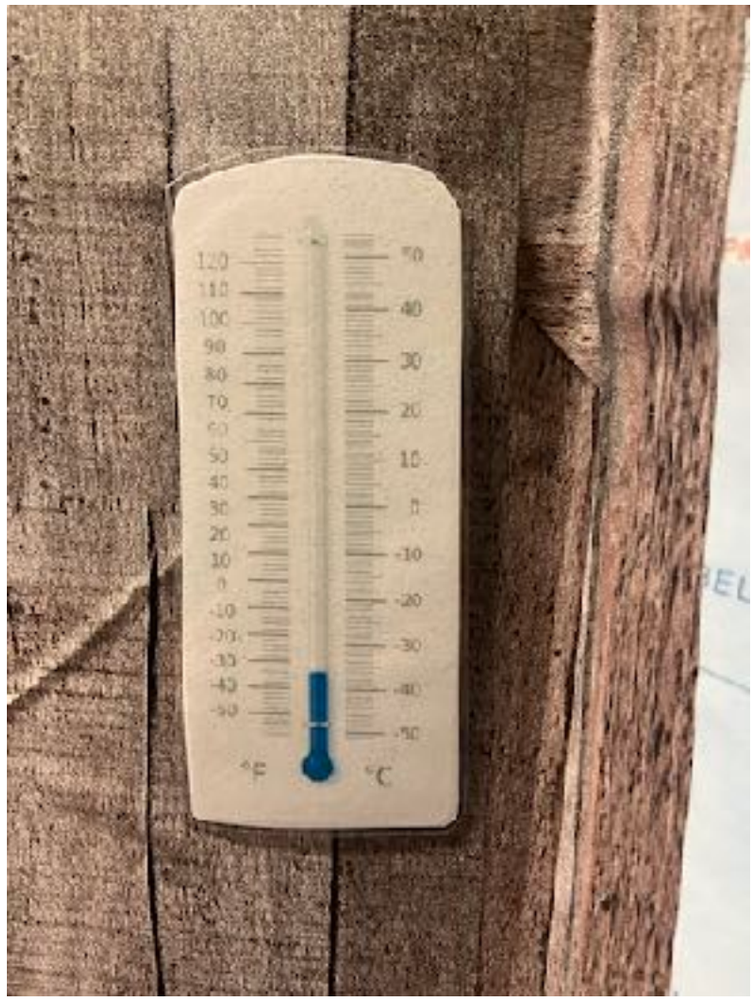
- In our Arctic Concept Booth, we placed many home made books which children can write in conjunction with seeing the films, classroom discussion and reading the Osborne book e.g.
    - Safety Guide
    - Food and Drink Rations
    - Boat and Skidoo Maintenance Logs
    - Rule Book



4 Talk, Reading & Writing Opportunities - The Polar Desert

Measure/Compare Weather

- Part of your maths daily dash should be to measure weather in the school playground and check in with the British Arctic survey and do a comparison with their weather. If you don't have an actual weather station use a thermometer, rain catcher and wind sock made from a plastic cup, string and paper streamers.
- Data can be collected and compared e.g.
    - Temperature
    - Daily Rainfall
    - Wind Direction
    - General Conditions
- This gives children context into which they can learn about measuring using:
    - Compass points
    - Millilitres
    - Windspeed in mph
    - Centigrade
    - How to record and compare them with very different numbers.



4 Talk, Reading & Writing Opportunities - The Polar Desert

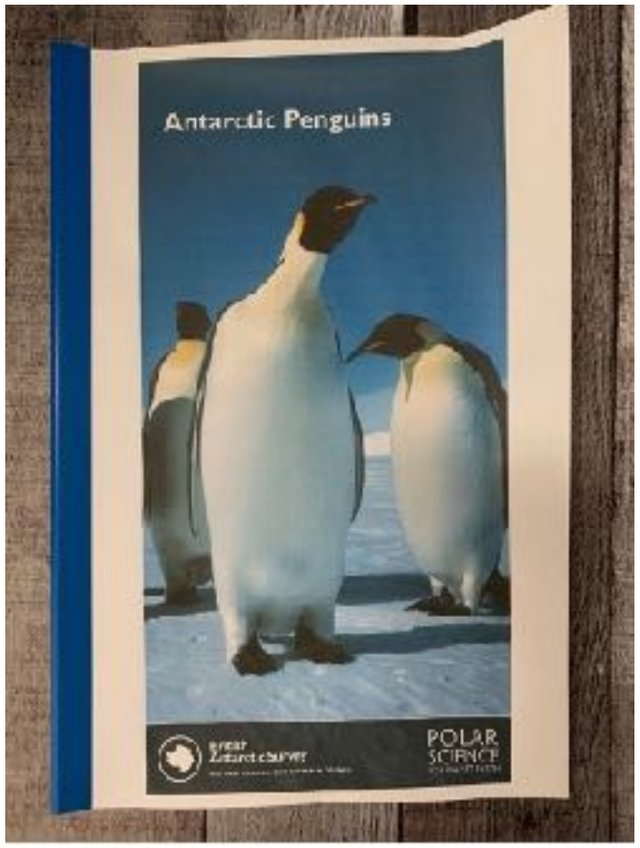
Observation Window

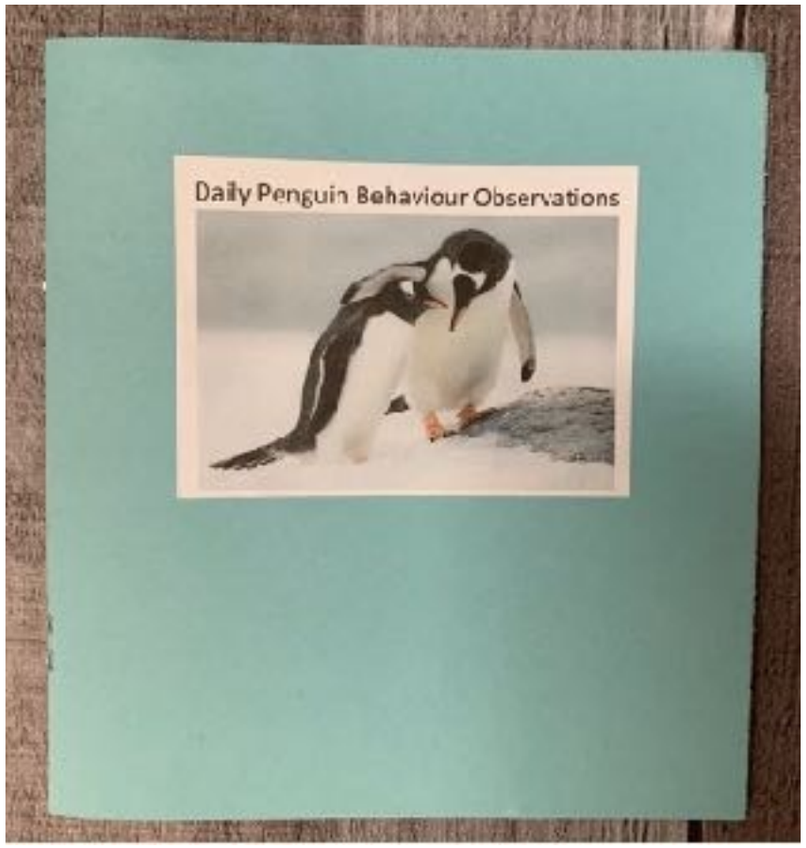
- We created a window so that you can change the view outside of the station to keep the booth enticing.
- Simply laminate interesting pictures and bluetack them into the window. Some examples could include:
    - A picture from the core story
    - A group of penguins to count
    - A fascinating picture of a landscape
    - A picture of the Skidoo
    - An Icebreaker ship

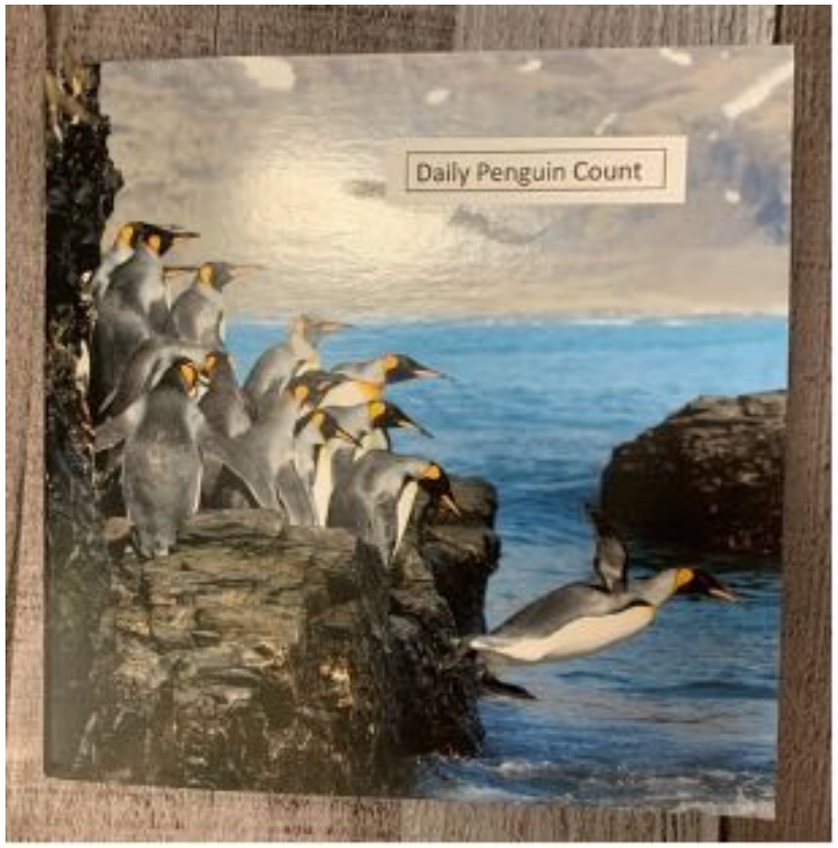
4 Talk, Reading & Writing Opportunities - The Polar Desert

Observe Penguins

- Use film footage to ‘observe penguins.’
  - Have the children sit very quiet and still under the table in a hide where they can watch the penguins and make notes about their behaviours.
  - They may need prompts on a daily observation sheet and they will do best if you share what different children saw on film.
  - Create booklets for children to complete with their findings.



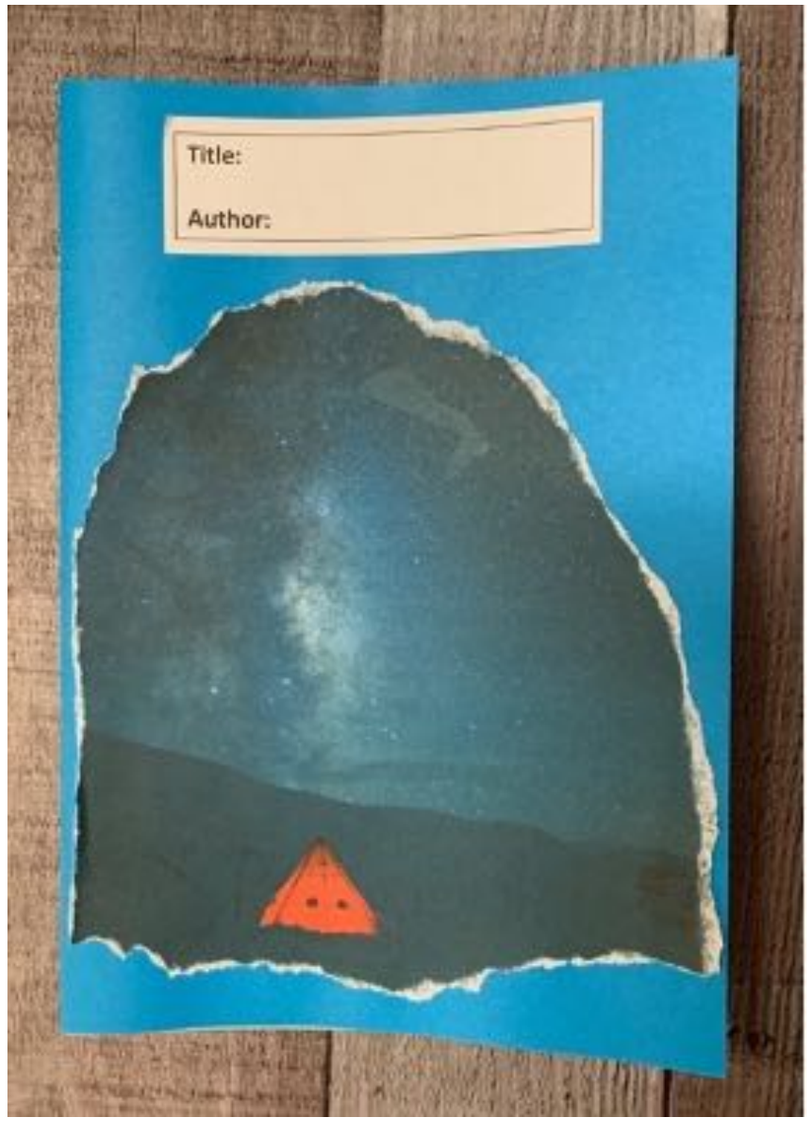




4 Talk, Reading & Writing Opportunities - The Polar Desert

Writing Opportunity

- Perhaps the children could write about being stuck out in the Antarctic for months without any rations left, as Shackleton and his crewe were and what they think they would have to do about it.



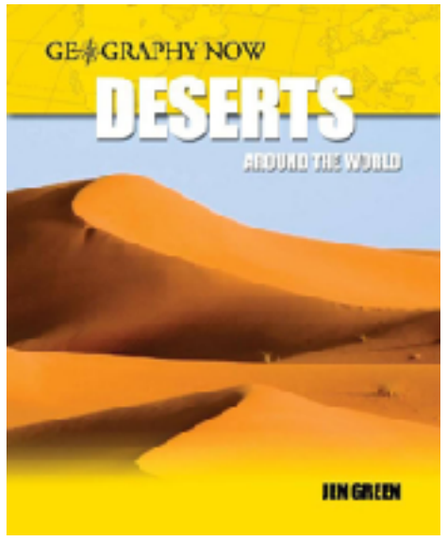
Reading Area

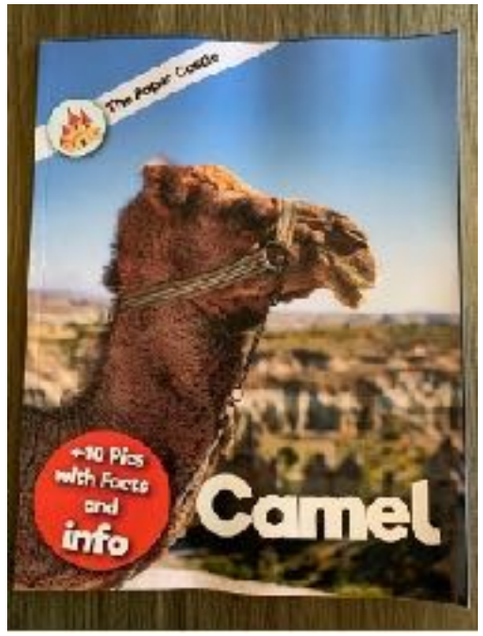
- You could drape white cloth and sheepskin rugs over your seats and add a white mosquito net and fairy lights over the whole thing
- Or you could make an igloo with milk cartons and lights. Just make sure (from bitter experience) that you wash the cartons in a little bleach before you use them. If you are an eco friendly school, then you can re-use the cartons to make a greenhouse. Kits for the frames are available online.

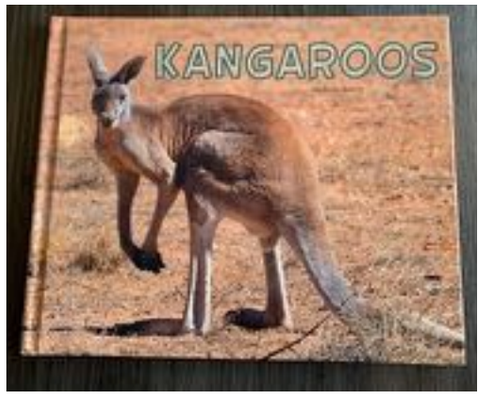
- Alternatively get a couple of large cardboard boxes and drape them with a white cloth. Make a cosy space where children can snuggle up with a blanket and read in fairy lights.

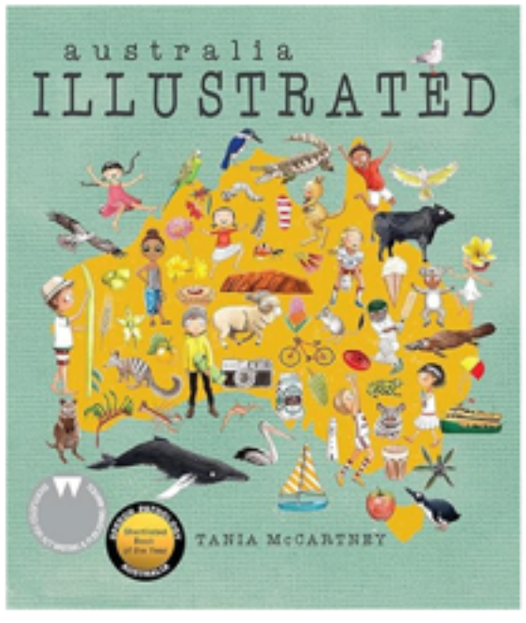
6 Talk, Reading & Writing Opportunities - Hot Deserts

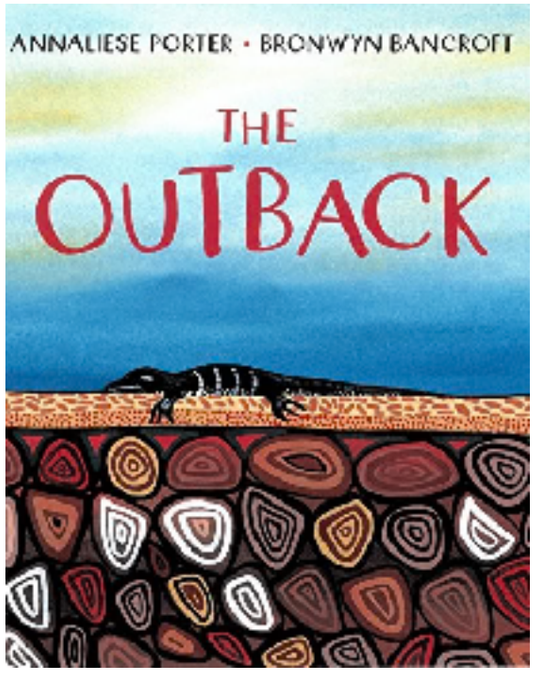
Book Suggestions

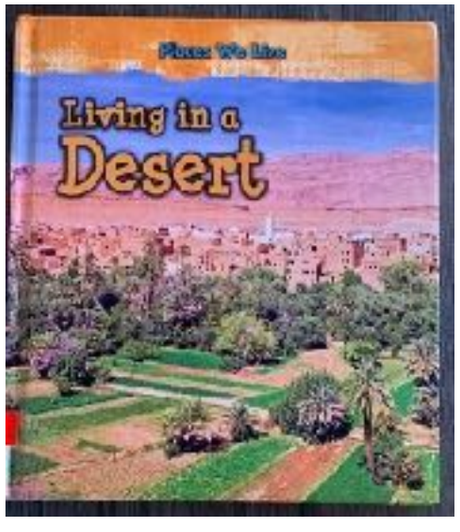


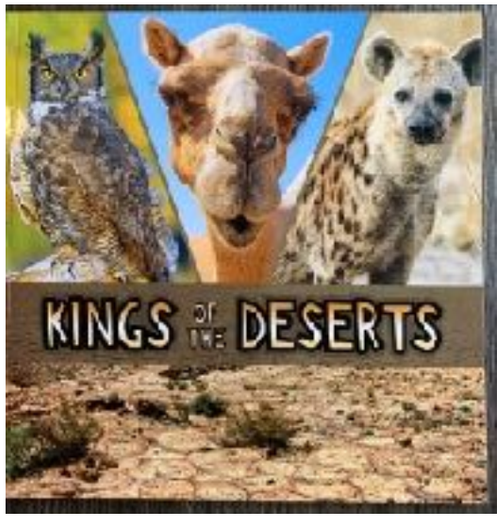












6 Talk, Reading & Writing Opportunities - Hot Deserts

Writing Opportuunities

- Vocab will be key if writing is to be significantly improved through the topic. Make sure you are offering/teaching new information every day and remember children at this age can remember 20 new words per day
- I would look to use film footage of Meerkat Manor. Currently, it is playing on Prime Video, or the boxset of the first three series in at World of Books for £8.99
- Meerkat Manor is a TV documentary series following a female meerkat, Flower and her rise to being matriarch of the Whisker's Meerkat Mob
- We learn about their preferred habitat, stomping grounds, hierarchy within the mob, their roles as sentinals, guards, fighters, babysitters and how they fight snakes, other mobs and preditors to keep their territory clear of danger and safe for their new pups
- Could the sand area become an exhibit of a meerkat territory?
- Could they write about the different meerkats and tell us about their job?
- Perhaps they could start a Meerkat cartoon, so we can read about their different adventures, fighting off other mobs, losing a pup or fighting off a snake that has slithered too close to the burrow?

Reading Area

- A piece of camouflage netting for shade would be good over the reading area
- In Early Years, we could swap the reading area for a few bags of sand so we can play at being at the beach, but if you can't face that, perhaps a sand coloured bed sheet over cushions or beanbags under your netting might suffice
- Add large photographs of desert scenes and some cactus and aloe vera plants. If it could link with your Beduin Home Corner, all the better

Appendix A

Potential Curriculum Coverage

Framework Coverage (Year 1)

Creatures at the Poles
Contrasting climates and habitats
General topic/provision work

Sc1/1 Working Scientifically

During years 1 and 2, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

Sc1/1.1 asking simple questions and recognising that they can be answered in different ways

Sc1/1.2 observing closely, using simple equipment

Sc1/1.3 performing simple tests

Sc1/1.4 identifying and classifying

Sc1/1.5 using their observations and ideas to suggest answers to questions

Sc1/1.6 gathering and recording data to help in answering questions

Sc1/2.1 Plants

Sc1/2.1a identify and name a variety of common wild and garden plants, including deciduous and evergreen trees

Sc1/2.1b identify and describe the basic structure of a variety of common flowering plants, including trees

Sc1/2.2 Animals including humans

Sc1/2.2a identify and name a variety of common animals including, fish, amphibians, reptiles, birds and mammals

Sc1/2.2b identify and name a variety of common animals that are carnivores, herbivores and omnivores

Sc1/2.2c describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals including pets)

Sc1/2.2d identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense

Sc1/3.1 Everyday materials

Sc1/3.1a distinguish between an object and the material from which it is made

Sc1/3.1b identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock

Sc1/3.1c describe the simple physical properties of a variety of everyday materials

Sc1/3.1d compare and group together a variety of everyday materials on the basis of their simple physical properties

Sc1/4.1 Seasonal Changes

Sc1/4.1a observe changes across the 4 seasons
Sc1/4.1b observe and describe weather associated with the seasons and how day length varies

Art

Pupils should be taught:

Ar1/1.1 to use a range of materials creatively to design and make products

Ar1/1.2 to use drawing, painting and sculpture to develop and share their ideas, experiences and imagination

Ar1/1.3 to develop a wide range of art and design techniques in using colour, pattern, texture, line, shape, form and space

Ar1/1.4 about the work of a range of artists, craft makers and designers, describing the differences and similarities between different practices and disciplines, and making links to their own work

A Potential Curriculum Coverage

DT

DT1/1.1 Design

DT1/1.1a design purposeful, functional, appealing products for themselves and other users based on design criteria

DT1/1.1b generate, develop, model and communicate their ideas through talking, drawing, templates, mock-ups and, where appropriate, information and communication technology

DT1/1.2 Make

DT1/1.2a select from and use a range of tools and equipment to perform practical tasks

DT1/1.2b select from and use a wide range of materials and components, including construction materials, textiles and ingredients, according to their characteristics

DT1/1.3 Evaluate

DT1/1.3a explore and evaluate a range of existing products

DT1/1.3b evaluate their ideas and products against design criteria

DT1/1.4 Technical Knowledge

DT1/1.4a build structures, exploring how they can be made stronger, stiffer and more stable

DT1/1.4b explore and use mechanisms, in their products

DT1/2.1 Cooking & Nutrition

DT1/2.1a use the basic principles of a healthy and varied diet to prepare dishes

DT1/2.1b understand where food comes from

Geography

Ge1/1.1 Location Knowledge

Ge1/1.1a name and locate the world's 7 continents and 5 oceans

Ge1/1.1b name, locate and identify characteristics of the 4 countries and capital cities of the United Kingdom and its surrounding seas

Ge1/1.2 Place Knowledge

Ge1/1.2a understand geographical similarities and differences through studying the human and physical geography of a small area of the United Kingdom, and of a small area in a contrasting non-European country

Ge1/1.3 Human and Physical Geography

Ge1/1.3a identify seasonal and daily weather patterns in the United Kingdom and the location of hot and cold areas of the world in relation to the Equator and the North and South Poles

Ge1/1.3b use basic geographical vocabulary to refer to:

i. key physical features, including: beach, cliff, coast, forest, hill, mountain, sea, ocean, river, soil, valley, vegetation, season and weather
ii. key human features, including: city, town, village, factory, farm, house, office, port, harbour and shop

Ge1/1.4 Geographical Skills and Fieldwork

Ge1/1.4a use world maps, atlases and globes to identify the United Kingdom and its countries, as well as the countries, continents and oceans studied at this key stage

Ge1/1.4b use simple compass directions (North, South, East and West) and locational and directional language to describe the location of features and routes on a map

A Potential Curriculum Coverage

Ge1/1.4c use aerial photographs and plan perspectives to recognise landmarks and basic human and physical features; devise a simple map; and use and construct basic symbols in a key

Ge1/1.4d use simple fieldwork and observational skills to study the geography of their school and its grounds and the key human and physical features of its surrounding environment

History

Hi1/1.1 changes within living memory. Where appropriate, these should be used to reveal aspects of change in national life

Hi1/1.2 events beyond living memory that are significant nationally or globally
e.g. the Great Fire of London, the first aeroplane flight or events commemorated through festivals or anniversaries
The Race to the Pole. Shackleton

Hi1/1.3 the lives of significant individuals in the past who have contributed to national and international achievements. Some should be used to compare aspects of life in different periods
e.g. Elizabeth I and Queen Victoria, Christopher Columbus and Neil Armstrong, William Caxton and Tim Berners-Lee, Pieter Bruegel the Elder and LS Lowry, Rosa Parks and Emily Davison, Mary Seacole and/or Florence Nightingale and Edith Cavell and Edith Cavell
Captain James Cook (from Yorkshire) and Neil Armstrong or David Attenborough

Hi1/1.3 significant historical events, people and places in their own locality.

Music

Mu1/1.1 use their voices expressively and creatively by singing songs and speaking chants and rhymes

Mu1/1.2 play tuned and untuned instruments musically

Mu1/1.3 listen with concentration and understanding to a range of high-quality live and recorded music

Mu1/1.4 experiment with, create, select and combine sounds using the interrelated dimensions of music

PE

PE1/1.1a master basic movements including running, jumping, throwing and catching, as well as developing balance, agility and co-ordination, and begin to apply these in a range of activities

PE1/1.1b participate in team games, developing simple tactics for attacking and defending

PE1/1.1c perform dances using simple movement patterns.

Have you seen the other topic-based resources in this set?

https://leadingchildren.com/blogs/resources

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