



**KING EDWARD VI
HANDSWORTH WOOD
GIRLS' ACADEMY**

Educational excellence for our City

High Performance Learning.

LINKING

Learning Outcomes.

- ✓ Identify how to make links.
- ✓ Explain ideas and concepts when making links.
- ✓ Apply linking skills in research tasks and when creating original work.

Character Virtue Focus:

Resilience, Respect, Tolerance.

Intellectual Virtues

Reflection
Critical Thinking

Moral Virtues

Tolerance
Respect
Gratitude

Civic Virtues

Social Justice
Volunteering

Performance Virtues

Resilience
Ambition
Confidence



There are six ACPs under the meta-thinking heading

Examples of linking in action

Generalisation: I can recognise similar patterns and similarities and apply a method that I have used to a range of different situations.

Connection finding: I can make links across topics, subjects and prior learning.

Big picture thinking: I know what's happening globally and can consider big, real world ideas.

Abstraction: I can understand something even if it can't be seen. I can explain a theory even if it's not fact.

Imagination: I can apply prior knowledge to problem solving. What if?

Seeing alternative perspectives: I am open to alternative ideas and ready to question something accepted as true.

- I remember when...
- What does this remind me of?
- What is similar to/different to a previous event?
- Do I think something I saw elsewhere might work this time? Why?
- What would happen if...?
- Could I look at this from a different angle?



GENERALISATION

The ability to see how what is happening in this instance could be extrapolated to other similar situations.



CONNECTION FINDING

The ability to use connections from past experiences to seek possible generalisations.



BIG PICTURE THINKING

The ability to work with big ideas and holistic concepts.



ABSTRACTION

The ability to move from concrete to abstract very quickly.



IMAGINATION

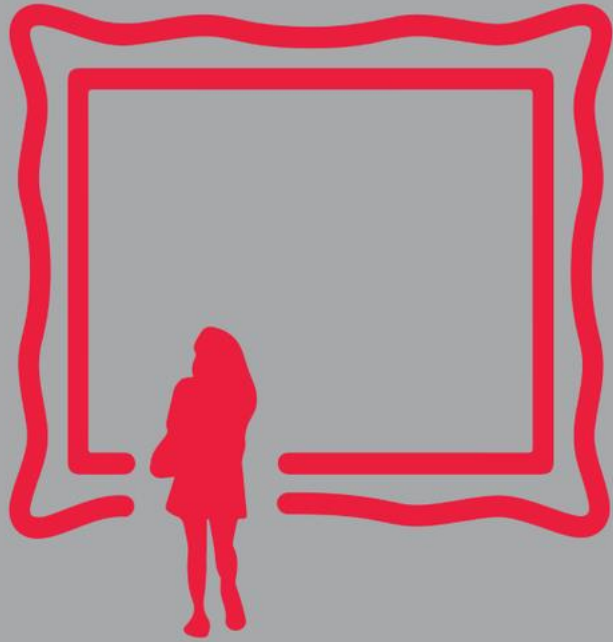
The ability to represent the problem and its categorisation in relation to more extensive and interconnected prior knowledge.



SEEING ALTERNATIVE PERSPECTIVES

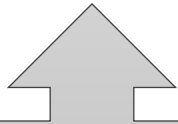
The ability to take on the views of others and deal with the complexity and ambiguity.

LINKING



BIG PICTURE THINKING

The ability to work with big ideas and holistic concepts.



You have big question and will work as a team to generate ideas.

Carousel Task:

- In groups of 4/5, use A2 sugar paper to brainstorm your ideas to the big question.
- You will have 3 mins to write as much on the sheet as you can.
- When the time is up remain seated, and rotate the papers and add to another groups work.

Why does an Emperor Penguin have a head too small for its body?



Big Question

Why does an Emperor Penguin have a head too small for its body?



Compare your Answers

- This is because the penguin had adapted to keep warm.
- Just like humans, the Emperor Penguin loses heat from his head.
- A small head has a small surface area so heat is not lost – the bigger the surface area the more heat they will lose making it difficult to survive cold weather.
- The penguin is in an oval shape. Having a small head, makes them streamline to cut through the water. This means they are faster when catching fish or swimming away from predators.
- They also have a small pointy beak with specially arranged veins and arteries, that help to recycle their body warmth. The blood vessels are arranged so they can regain most of the heat that would be lost by breathing.

LINKING



CONNECTION FINDING

The ability to use connections from past experiences to seek possible generalisations.

You will make connections between the penguin's head size and other features.



Using the knowledge that you have gained, add on to your A3 sheet and discuss:

Why does an Emperor Penguin have small feet? Do you think they feel the cold in their feet? Explain.

What is similarities/differences does this feature have in order to keep them warm?



Using the knowledge that you have gained, add on to your A3 sheet and discuss:

Why does an Emperor Penguin have small feet?

Do you think they feel the cold in their feet? Explain.

What similarities/differences does this feature have in order to keep them warm?

Compare your Answers

- They have small flippers, and small legs and feet, to help keep them warm. They have thick layers of skin on their feet.
- They have small feet so less heat can be lost – just like their head.
- Just like humans, the first place that you feel the cold is from your hands and feet? This is because the feet are furthest away from their body – small feet help to retain warmth.
- Penguins avoid their feet getting too cold by hunching down so that their belly feathers cover their feet, or by rocking back onto their heels and tail to lift their feet off the ice. They also have counter-current heat exchangers that regulate their foot temperature to keep them at least just above freezing.
- They also walk on their heels to make a smaller surface area that touches the freezing ground– this is one of the reasons why Penguins waddle!

What would happen if they had a bigger feet/head?

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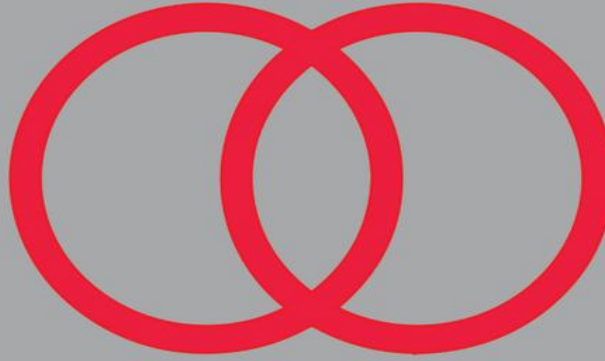
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CONNECTION FINDING

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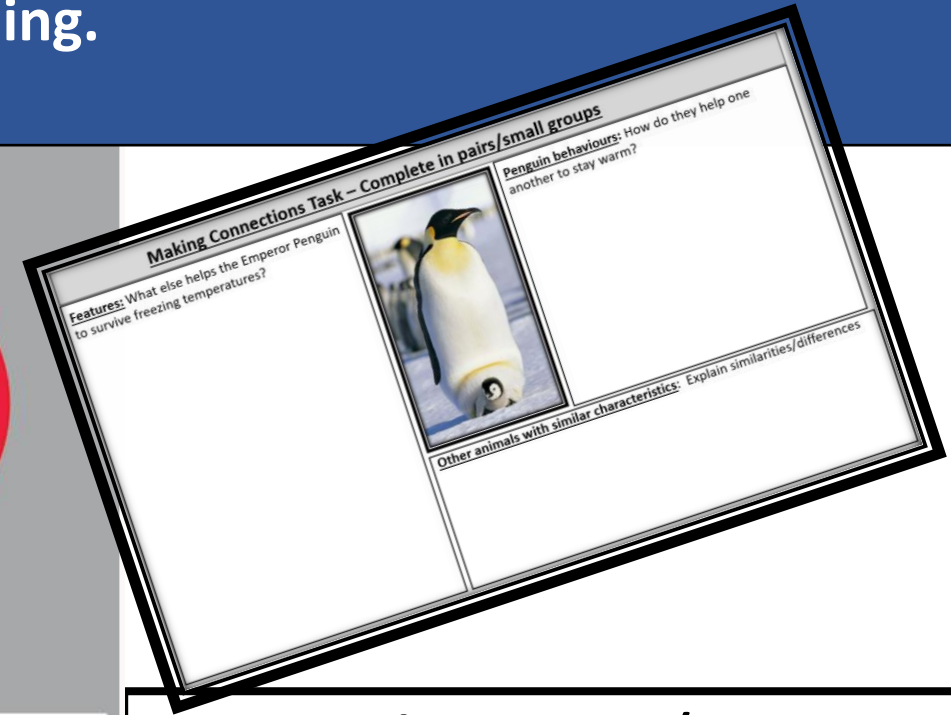
You will make connections by building on what you may already know about Emperor Penguins.



GENERALISATION

The ability to see how what is happening in this instance could be extrapolated to other similar situations.

You will investigate information further about the Emperor penguin and explore if these trends are applicable to other animals.



Task : In groups/pairs

- 1) Use the work sheet to make further connections on how an Emperor penguin stays warm.
- 2) As a team discuss if these trends are applicable to other animals in the Antarctic.
- 3) Feedback on your findings to the class

Making Connections Task – Complete in pairs/small groups

Make Links from other subjects. Geography, Science, biology.

Features: What else helps the Emperor Penguin to survive freezing temperatures?



Penguin behaviours: How do they help one another to stay warm? Describe the habitat/climate

Other animals with similar characteristics: Explain similarities/differences

Features: What else helps the Emperor penguin to survive freezing temperatures?

- Penguins have to keep high body temperatures to remain active. They have thick skin and lots of fat (blubber) under their skin to keep warm in cold weather.
- The dark coloured feathers of a penguin's back surface absorb heat from the sun, so helping them to warm up too.
- Penguins tightly packed feathers overlap to provide waterproofing and warmth. They coat their feathers with oil from a gland near the tail to increase permeability. Waterproofing is critical to penguins' survival in water, Antarctic seas may be as cold as -2.2°C



Penguin behaviours: How do they help one another to stay warm? Describe the habitat/climate.

- They hang around large groups and huddle.
- Emperor penguins gather close together in big groups called “huddles” to minimise how much of their body surface is exposed to cold air. This can cut heat loss in half and keep penguins’ core temperature at about 37°C even while the air outside the huddle is below -30°C .
- The biggest huddles ever observed had about 5,000 penguins!

Penguins take turns to be on the outer edge of the huddle, protecting those on the inside from the wind.

Other animals with similar characteristics:



Seal

What do you notice about the features that help them to survive freezing temperatures?



Snow petrel

LINKING



ABSTRACTION

The ability to move from concrete to abstract very quickly.

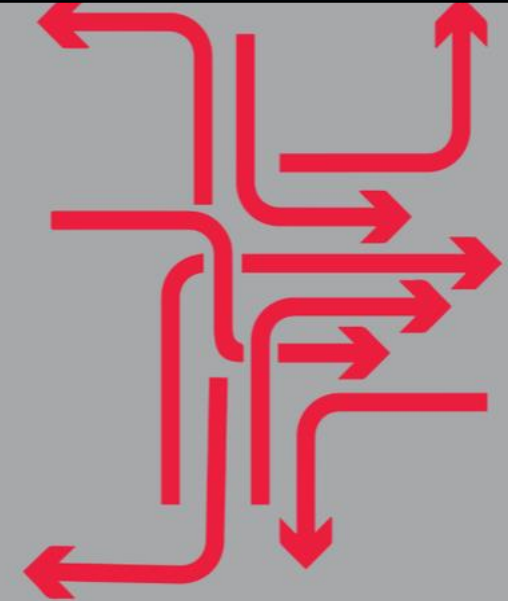
Use Evidence you have collected on the Emperor Penguin.
Use the theories learned to explain your thoughts in this task.....



IMAGINATION

The ability to represent the problem and its categorisation in relation to more extensive and interconnected prior knowledge.

You will use your imagination by creating a new creature to live in the Antarctica.



SEEING ALTERNATIVE PERSEPECTIVES

The ability to take on the views of others and deal with the complexity and ambiguity.

You will need to listen to others' ideas!

LINKING

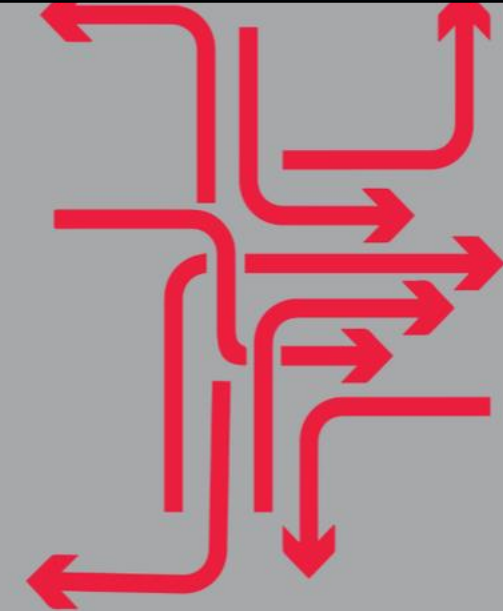


ABSTRACTION



IMAGINATION

The ability to represent the problem and its



SEEING ALTERNATIVE PERSEPECTIVES

The ability to take on the views of

Task : Creature Creation

- 1) In small groups, use the information that you have gathered about the Emperor Penguins (Concrete)
- 2) Use your imagination to **create your own creature/animal that can survive in the Antarctica.** (Abstract)
- 3) Be as imaginative as you can! (See alternative perspectives)
- 4) Feedback and share your Share ideas to another group.



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