Science in the Making: habitat journal

This resource was developed by teachers within the Royal Society Schools Network

Deflating the balloon, 04 February 1902. From The Royal Society, NAE/5/669

Curriculum key words

Adaptation
Inheritance
Primary sources

Curriculum links

Evolution and Inheritance:

- Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents.
- Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.
- Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets).

English: Composition

- Identifying the audience for and purpose of the writing, selecting the appropriate form and using other similar writing as models for their own.

Equipment

– photographs;
– websites for research

Upper KS2

Introduction

This lesson would be suitable for Y6 pupils who have already studied evolution and inheritance. It uses primary sources of information from Robert Falcon Scott's expedition to Antarctica and encourages pupils to create their own journal as if they themselves were on the expedition.

Their task is to document the animals that they discover in the Antarctic and to consider ways in which they have adapted to suit their environment. They will do this through applying previously learnt knowledge of evolution and inheritance, and through observation and research.

Depending on how these lessons are approached, they could take anything from 3 lessons right up to a half terms worth of lessons and will also require pupils to apply their understanding of recount writing.

Learning objectives:

To understand the challenges faced by animals in a polar habitat and to know how some animals have adapted to thrive there.

Success criteria (SC):

- SC1: I can say how some animals are adapted to suit their environment.
- SC2: I can research an animal using books or the internet to find out more information about them.
- SC3: I can write a journal entry from a first person point of view which contains correct scientific words and clear explanations.

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Starter activity: thinking about evolution and adaptation

(Approximately 10 – 20 minutes) [SC1]

Discuss with the class what they have learnt about evolution and adaptation.

Show some images (without animals) of the Antarctic.

Discuss the environment and conditions and make suggestions based on this about what animals they would expect to see living in the Antarctic and why. What animals would they NOT expect to see living in the Antarctic and why?

Get them to design the perfect animal for living in the Antarctic, what would it look like, what features would it have to make it suitable for living in this extreme environment. Annotate their designs with reasons for their choice of feature.

Activity A: introducing the British National Antarctic Expedition

(Approximately 20 – 30 minutes)

As a class, read background information about Scott's expedition and discuss with the pupils:

Cool mantarctica (https://www.coolantarctica.com/Antarctica%20fact%20file/History/Robert-Falcon-Scott.php)

The British National Antarctic Expedition (https://makingscience.royalsociety.org/s/rs/themes/fst01405225)

Explain that one of the projects that the expedition was undertaking was to document the different species of animal that live in Antarctica. Students are to imagine that they are going on the expedition as a scientist whose role it is to record the animals they come across on their journey. They will be writing journal entries describing both their experiences and the animals they have seen on the journey.

Look at examples of reports from Scott from Science in the Making, explaining that these are primary sources of information from the actual expedition.

Summary of proceedings by Robert Falcon Scott, 'Discovery', Auckland Island, New Zealand
(https://makingscience.royalsociety.org/s/rs/items/MS_591_1_11)

Official Report of the Voyage of the Discovery sent by Reuters (https://makingscience.royalsociety.org/s/rs/items/MS_547_7_19/ec1ca1)

Activity B: selected your primary sources

(Approximately 15 – 60 mins depending on how much research or speaking and listening exercises are done) [SC2]

Students should go through the The British National Antarctic Expedition collection from the Royal Society and select their choice of images for the following catagories:

1. An image of The Discovery.

2. An image of the team of scientists and explorers who they are travelling with.

3. 4 images of animals (some of these can be the same type of animal e.g. penguin but different species).

4. An image depicting the conditions in which they are travelling.

Print off the chosen images to add to their journal.

Prior to each journal entry, encourage pupils to research and then carry out speaking and listening activities to generate ideas, refine language choices, explore feelings.

Opportunities for research

Cool Antarctica (https://www.coolantarctica.com/gallery/Antarctica_gallery_home.php)

Cool Antarctica (https://www.coolantarctica.com/Antarctica%20fact%20file/History/shackleton-tweets-page1.php)

Teacher note: These are imaginary tweets from Shackleton on his 'Endurance' expedition but may support pupils in grasping the kinds of challenges they may face - some may not be appropriate, so please select those that are, and print off.

Examples of speaking and listening exercises:

- Role play in small groups. Present and discuss these with the class.

- Hot seat a character from the expedition e.g. Wilson who has become snow blind.

- Freeze and thought tap - get a group of pupils to arrange themselves into a tableau, tap on one shoulder and that character then describes what he/she is thinking.

- Teacher hot seat - if you are trying to extend pupils understanding of a particular aspect of the journey, become the character and get the pupils to ask the questions.

Activity C: write the journal

(Approximately 15 – 30 minutes per journal entry) [SC1, SC2, SC3]

Get the pupils to write their entry for the following nine journal entries listed below. Each has some promts you can use to help focus the content for the students. This could be done over the day or across a week / fortnight.

Journal entry 1 (starting out): Imagine you are a scientist on The Discovery, what are your thoughts, feelings when you first see The Discovery? What do you think of its name and how does that make you feel? Are you excited, nervous? How have you come to be on the trip?

Journal entry 2 (clothes): What are you wearing and how does this make you feel? How is everyone feeling at this point?

Journal entry 3 (first animal sighting): What is the first animal you come across? Describe what you see, hear, feel. Can you look at it scientifically and describe it, perhaps suggesting how it has features that make it suitable for its environment. Research the animals and write your entry. Perhaps make a sketch and add it to your journal.

Journal entry 4 (second animal sighting): What is the next animal you come across? Describe what you see, hear, feel. Can you look at it scientifically and describe it, perhaps suggesting how it has features that make it suitable for its environment. Research the animals and write your entry. Perhaps do a sketch and add it to your journal.

Journal entry 5 (illness in the group): Describe how your colleagues are becoming increasingly ill. How does this affect morale? How are you feeling?

Journal entry 6 (third animal sighting): What is the next animal you come across? Describe what you see, hear, feel. Can you look at it scientifically and describe it, perhaps suggesting how it has features that make it suitable for its environment. Research the animals and write your entry. Perhaps make a sketch and add it to your journal.

Journal entry 7 (environment - ice formations): Describe your environment - perhaps you see some interesting ice formations, perhaps an iceberg, perhaps your view of the upper deck of The Discovery after winter. You could also make a sketch of it.

Journal entry 8 (fourth animal sighting): What is the next animal you come across? Describe what you see, hear, feel. Can you look at it scientifically and describe it, perhaps suggesting how it has features that make it suitable for its environment. Research the animals and write your entry. Perhaps do a sketch and add this to your journal.

Journal entry 9 (reflections about what you've discovered): Finish your journal by describing how you feel about all the experiences you've had.

- What have you learned?
- What have been the best parts of the trip?
- What have been the worst?
- What would you do differently if you did a similar trip again?
- What are you going to do next?

Plenary

(Approximately 10 – 20 mins)

Provide pupils with the opportunity to go back through the resources from Science in the Making and discuss, as a class, what they now feel about some of the images.

- Has writing the journal helped them to connect with the images more?
- Do they have a better understanding of what it might have been like?
- Would they have liked to be on the Expedition?
- What do they think about Antarctica now?
- What have they learnt about adaptation?