

Antarctica Project Lesson Plans

Originally 10 x 1 hour sessions for pupils approx. 11 years old

Curriculum areas addressed:

English

- Recount genre through writing journals.
- Explanations to describe phenomenon e.g. six months daylight, six months night.
- Narrative genre through the use of "story" to engage students in the unit.

Science and Technology

- Earth and its surroundings.
- Living things.
- Information and communication

Performing Arts

- Drama through role-play.
- Music or other performance to create song for entertainment.

IT (computing)

- Use of internet for research.
- Producing a PowerPoint presentation.

Session	Contents
1 - 2 hours	Introduction of topic. Students research general facts about Antarctica
2 - 1 hour	Students design and build shelter.
3 - 1 hour	Students spot Polar bear? Research fauna and flora.
4 - 1 hour	Students research occupations and role-play reporting to Base Commander. Discuss safety issues
4a - if possible - 1 hour	Guest speaker coming (if can be arranged). Students ask questions.
5 & 6 - 2 hours	Ernest Shackleton and the Endurance Expedition.
7 - 1 hour	Watch movie "March of the Penguins" or other.
8 - 1 hour	Tourism and development. Students discuss and research environmental issues affecting Antarctica. Antarctic Treaty. Human impacts on Antarctica.
9 - 1 hour	Stuck in hut due to snowstorm. Students devise entertainments. Write journals of experiences.
10 onwards	Students work on PowerPoint presentations - minimum 2 hours, as required.

Session 1 - Introduction, students research general facts about Antarctica - 1 to 2 hrs.

Key Questions

- Where is Antarctica?
- What are the weather conditions like?
- What is the landscape like?

Special Needs

- Experiment with their role as researcher
- Name one of Antarctica's neighbours
- Name three items which would be needed by visitors to Antarctica
- Provide description of Antarctica's weather conditions

Mainstream

- Provide some detail of their feelings as researcher.
- Explain how they might have expected the journey to be.

Gifted and Talented

- Provide greater detail about their role as researcher by providing historical examples to highlight their ordeal
- Explain in detail their hypothetical journey and explore their feelings and hardships they may have endured.

Teacher introduces Antarctica as a narrative. The story goes something like this:

"Today you are all going to become explorer-scientists who have been given the mission of finding out about Antarctica. You will be leaving in one week and you need to use the time that you have left to discover as much about Antarctica as possible. If you don't have the right information, you might come across many dangers and you might even risk your lives and the lives of the others.

Your first job is to find out where Antarctica is, and what it's like there. You then need to decide what you should take with you and say why you need those things.

You will be going on this expedition with four other people and each of you is allowed to take four things, apart from your clothes. In your groups you will discuss what things you need.

When you finally arrive, you must write a short journal entry to describe the situation. Remember, you don't have much time to write, so only write the important things. Good luck!"

NOTE: Teacher allocates groups and decides whether this will be ability or mixed-ability groups. For this first activity it might be better starting off with mixed-ability groups.

Resources: Workbooks or cardboard, markers, Photos, books (easy and hard to read for varying abilities) travel brochures.

Antarctica school resources | Fact file - inc. printable version | Introductory Presentation

Session 2 - Design and build a shelter - 1 hr.

Key Questions

- What are the basic requirements for a shelter?
- How can a shelter be built?
- What problems would be faced by builders in Antarctica?

Special Needs

- Name the basic requirements and need for a shelter

Mainstream

- Name the basic processes involved in building a shelter.
- Explore the importance of safety in Antarctic conditions.

Gifted and Talented

- Explain in detail the processes of building a shelter and the importance of this in Antarctic conditions.
- In detail describe historical facts about Antarctica exploration including hardships and dangers faced by explorers.

"You are now the researchers and in Antarctica most bases are not on frozen soil, but on bedrock or on a (usually moving) ice-shelf - which present their own problems. You must **quickly** build a shelter. Firstly, you must find out that kind of materials were used to build shelters in the past, and what is being used now. You must discuss amongst yourselves whether you will use olden day materials or present-day materials and why".

Halfway through this activity teacher informs students that,

"A snowstorm has just hit and you must quickly decide what you should do to remain safe."

Short time later teacher informs class that,

"Luckily the storm only lasted for a short while and you can continue building your shelter."

NOTE: For this activity old sheets and long sticks can be collected and used to produce the "shelter". String can be used to secure the sheets to the sticks. This is a token activity designed to illustrate to the students the importance of shelter in Antarctica and the hardships experienced by explorers, especially the early explorers. Empty plastic milk or other bottles/containers could be made to provide a shelter for class display in the form of an igloo.

This could be taught in conjunction with the ideas here: - man as a tropical animal

Resources: Long sticks or canes strong enough to hold up sheet. Old sheets or canvas (if available) String or soft rope, books about Antarctica.

Session 3 - Polar bear spotted? Research fauna and flora - 1 hr.

Key Questions

- What kinds of animals live in Antarctica?
- How are they able to survive there?
- What kind of plant life is there?

Special Needs

- Name three species of animals found in Antarctica
- Understand that polar bears are not found in Antarctica

Mainstream

- Be able to identify two groups of animals and identify two species within each group.

Gifted and Talented

- Identify a variety of animal species found in Antarctica.
- Briefly describe specific features relating to each animal e.g. feeding habits, habitat, breeding.

"You are presently living in the hut. You hear noises outside and using a spotlight shone through the window you spot what you think is a huge polar bear. What are you going to do? You must research the fauna and flora of Antarctica so that you can find out what kind of animal it might be."

Researchers realise that there are no polar bears in Antarctica and discover that it's just a lost penguin.

NOTE: Students can do part of this activity in the "shelter" they built in the previous lesson to increase their enthusiasm for the lesson. This can be done as a role-play.

Session 4 - Research occupations and role-play report to Base Commander - 1 hr.

Key Questions

- What kinds of occupations are needed in Antarctica?
- Why isn't there a wider range of occupations?
- Why is safety important in Antarctica?

Special Needs

- Name one of the jobs on an Antarctic base.
- Name one activity people do for leisure.
- Brainstorm reasons for safety rules.

Mainstream

- Name up to three of the different jobs on Antarctic base and briefly describe each of these jobs
- Name some of the leisure activities
- Explain problems which may arise from neglecting safety rules.

Gifted and Talented

- Describe the various jobs and provide detail about each job.
- Describe a variety of leisure activities on Antarctica
- Describe a variety of safety procedures

The teacher will read this out to the class as a formal letter from the Base Commander.

"The Base Commander has requested that all personnel report to the main dining area for a full report of their activities for the week. Each person is to be present at 16:30 sharp. No excuses will be taken from

late-comers. In addition, the meteorology department is to have a report regarding the possible blizzard heading our way.

The Base Commander will also discuss safety issues because some personnel are taking risks.

The group of people who returned late back to base after their visit to a local penguin colony triggered an alert and the assembly of a rescue party that was about to set out when they were seen. This caused considerable worry and disruption for the base - those individuals have been spoken to."

Any off-base trips could get into trouble, even to relatively safe places and in good conditions, see the email from 14th Oct 2003 here.

The teacher places students in groups of 3 and each group must research a particular occupation on Antarctica, e.g. marine biologist or engineer. Students also report on safety issues on Antarctic bases.

The students must then submit a written and oral report detailing their job description and role-play giving an account of their activities in front of their class.

Homework, preparation for next lesson if appropriate: "You discover that an Antarctic expert is coming and there are still some things that you don't know. You decide to make up a list questions to ask this person when he arrives."

Resources: postings from researchers in Antarctica on internet, books, teacher-prepared letter from "Base Commander." Safety procedures in Antarctica

Session 4a - Guest speaker if possible. Students ask questions - 1 hr.

Guest speaker arrives (if possible) - Students ask questions.

Special Needs

- List at least one question

Mainstream

- List at least three questions to ask guest speaker

Gifted and Talented

- List a variety of question which require more involved answers

Sessions 5 and 6 - Ernest Shackleton and the Endurance Expedition - 2 hrs. total

Key Questions

- Who was Ernest Shackleton?
- What was the purpose of the Endurance Expedition?
- Why do people explore?
- Is it worth taking the risks to explore new places or do things no-one has managed before?

Special Needs

- Explain what Shackleton was trying to do and why it went wrong.
- Explain why the men stayed with the ship in the winter and why it was so difficult to get back home.

Mainstream

- Describe the key stages of the journey as winter, the ship being crushed, the journey to Elephant Island, the boat journey to South Georgia and then the rescue of the men from Elephant Island.
- Identify 3 problems that Shackleton and his crew had to deal with other than the loss of the ship.

Gifted and Talented

- Describe two difficulties that Shackleton and his men would have had to face at each stage.
- Give an opinion on whether or not Shackleton and his men achieved anything, what it was and whether it was admirable or not.

Download and show the Power Point summarizing Ernest Shackleton's Endurance Expedition from this page. (There are also pictures that can be downloaded from the same page and copied for use in class).

Students can take notes based on the Key Questions if prompted by the teacher through the presentation. A printable time line is available here with a list of the men who went.

Discussion of the Key Questions can take place at the end.

A variety of work can be set from using the printed time-lines and pictures as resources, from the following suggestions:

- A simple description of the events.
- A narrative written from the perspective of one of the men of the expedition.

- There is a narrative written from the perspective of Mrs. Chippy, the ship's cat which can be purchased and read in part or whole, USA UK Worldwide
 - Ernest Shackleton is considered one of the greats of Antarctic exploration, further research as to what he did could be carried out and compared to Amundsen, Mawson and Scott.
 - A larger display could be made in the form of a wall mounted time-line as a collaborative exercise.
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Session 7 - Watch movie "March of the Penguins" - 1 hr.

Key Questions

- Why would people make movies about Antarctica?

Special Needs

- Identify the main theme of the movie.
- Recount one event from the movie.

Mainstream

- Recount a up to four events from the movie in order.

Gifted and Talented

- Elaborate on various aspects of the movie and provide an individual point of view regarding the movie

"You have found out that someone had brought a movie with them and the Base Commander has told everyone that they can watch in the big dining room.

But guess what? The movie is about Antarctica! Oh well, there's nothing else to do so you decide to go ahead and watch the movies anyway. The Base Commander tells you that the movie has some important information about a job that you have to do the next day so you are asked to take notes during the movie!"

Students for this lesson watch the movie "March of the Penguins" narrated by Morgan Freeman and directed by Luc Jacquet.

Students take down notes to share in a discussion after the movie.

Resources: DVD of movie "March of the Penguins", "Frozen Planet" could be used as an alternative.

Session 8 - Tourism and future development - 1 hr.

Key Questions

- How do environmental organisations look after Antarctica?
- Why is it important to preserve Antarctica?
- What things can we do to preserve Antarctica?

Special Needs

- Show basic understanding of human impact on Antarctica
- Briefly discuss main aspects of global measures taken to ensure preservation of Antarctica.

Mainstream

- Identify organisations created to ensure preservation of Antarctica.
- Identify one specific problem and describe briefly measures taken to combat this problem.

Gifted and Talented

- In-depth study of various problems facing Antarctica and discuss at length organisations created to preserve Antarctica.

"A message has arrived from the government of our country. We are to begin to assess this area of Antarctica for its value in providing resources such as minerals to be mined, fish to be caught, and whether it is reasonable to try and drill for oil.

You are required to write a short report on those areas that you know about personally - the marine biologists and boatmen about how good the fishing is, the geologists about where the most promising rock types are etc. Then in the summer in 3 months time, there will be a representative who will come to see for themselves how valuable this section of Antarctica could be in supplying natural resources.

This currently goes against the Antarctic Treaty which was established to ensure that Antarctica does not become exploited, but this is not guaranteed to be in place for ever."

Students research environmental issues impacting on Antarctica and organisations which have been established to combat these issues. Students role-play report given to Base Commander and are required to answer a set of questions by their classmates.

Resources: Internet access, books, pamphlets from environmental organisations which outline the impact of human activity on Antarctica (e.g. Greenpeace).

Session 9 - Stuck in hut due to snowstorm. Students devise entertainment.

Write journals of experiences - 1 hr.

Key Questions

- How can music or other entertainment be created in Antarctica?
- What kinds of songs would people living there sing?
- What other sorts of entertainments could be made if people aren't musical?

Special Needs

- Suggest topics for creating songs
- Identify key issues of living in Antarctica.
- Recognise some feelings related to living in isolation as part of a group.

Mainstream

- Create basic verses for the songs.
- Recognise and discuss feelings and issues of living in isolation and as part of a group.
- Actively participate in creating songs and performing them.

Gifted and Talented

- Create elaborate verses for songs and participate actively in performing them.
- Discuss at length feelings associated with living in isolation in Antarctica.

"A snow storm has suddenly hit and you are forced to stay inside the hut for the entire day. You must create a percussion band with equipment that has been brought with you into the hut. These can only include basic cooking utensils. You must also compose a song which sums up your ordeal in the Antarctic. How are you feeling at the moment, what will you do as soon as the storm subsides? These are all questions which you can use to guide you when you create your song." Alternatively you can produce some other form of entertainment.

For this activity the students are placed into groups of three by the teacher. The teacher also chooses two students to stay inside their hut for the duration of school day. The students are only allowed to take their lunches with them and they are only allowed out to use the toilet. They must not talk to anyone so that they can be as isolated as possible.

They must take their journal with them and describe their ordeal while they are in the hut.

Resources: various cooking utensils (pots, pans, spoons), anything that can be used to create simulated percussion music, the tents that were previously built or a designated space if this is not possible.

Session 10 - Presentations - time flexible, 2hrs?

Key Questions

- Use all previous key questions.
- This is an assessment task

Special Needs

- Create basic PowerPoint presentation of at least 3 slides presenting basic facts about Antarctica.

Mainstream

- Students will create PowerPoint presentation of at least 6 slides presenting more in-depth knowledge of Antarctica.
- Students will show brief knowledge of issues affecting Antarctica.

Gifted and Talented

- Students will create a comprehensive and detailed PowerPoint presentation showing a deep understanding of Antarctica and its issues.

Students should now have enough information to begin creating their own PowerPoint presentations. Each student will prepare an individual PowerPoint presentation and at the end of the unit students will try out each other's presentations.

The students present their understandings of Antarctica through a PowerPoint presentation.

The motive for the PowerPoint presentations is so that students are afforded the opportunity to consolidate their Antarctica work. The added bonus of the computer is to act as encouragement so that students are motivated to achieve. The presentations will be used as an assessment tool.

If a data projector is available, then they can be shown to the whole class for peer-marking.

The students will choose photos of Antarctica from a selection already supplied by the teacher. Teachers must be aware of copyright infringement laws when gathering their photos. Many are available from this website. Another good source is Flickr.com but attention must be paid to the copyright requirements, possibly requiring permission to be acquired from the owners of the photos.