



The Polar Explorer Cookbook – bringing real-world science into the classroom

Bryony Turford, Helen Spring and Beckie King show how The Polar Explorer Cookbook can support teaching and learning in primary science

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Introduction

Being Polar Ambassadors for the past 3 years as part of the Polar Explorer Programme (PEP), we have had the privilege of working directly with teachers and children in their classrooms, inspiring them with the fantastic range of resources curated by STEM Learning.

The original resource included personal stories of exploration that really captured the interest of the schools and children involved.

When the opportunity arose to write a Polar cookbook to complement the original materials, we knew that this personal angle was key to making this a real and relevant resource. Eight STEM professionals shared their educational and professional journeys to explain how they came to be in their current roles. From pilots to a conqueror of Mount Everest, from food chemists to station leaders, they are all hugely inspiring and motivating to read about.



What is The Polar Explorer Cookbook?

The *Polar Explorer Cookbook* is split into five mini-projects that can either be taught as stand-alone lessons or as part of a sequence, taking children on a journey of planning menus for scientists who work in the Polar regions, but have very different jobs.

These projects include:

- menu planning;
- making and testing the food;
- preserving and storing the food;
- packaging the food appropriately; and
- transporting the food across their very own Polar assault course.

Each activity is linked to at least one STEM Professional Profile and therefore sets the activity in a real-world context. Many of the STEM professionals also gave permission for their contact details to be included in the resource, so children have a genuine audience to whom to send their findings after their investigations. The activities are relevant to all primary science curricula and include links to the English National Curriculum. Working scientifically is woven into each activity, along with cross-curricular links to many other subjects, including English and maths.



Children work together to design how to transport their foods across a Polar assault course

CASE STUDY 1:

Working with Kirby Hill Primary School in North Yorkshire

Helen worked with Kirby Hill Primary School's Year 6 (age 11) class.

The children engaged with a range of activities, including:

- using dataloggers to research what colour of material would be the best for a Polar Explorer's goggles;
- finding out about ice in the Arctic and Antarctic and learning about salty seas;
- cooking 'bannocks' from Ernest Shackleton's original recipe. After the *Endurance* sank amongst the ice floes of the Weddell Sea, this simple flatbread sustained the crew, as it could be made easily with minimal equipment on a blubber stove made of scavenged metal from the shipwreck;
- building shelters intended to protect them from the harsh Antarctic conditions;
- training like explorers by taking part in a gruelling obstacle course; and

- investigating the best way of transporting a food parcel (in this case, bread rolls) over an obstacle course representing the Antarctic.

It was great to see the Polar Explorer displays that the children had been busy creating, and to hear the amazing facts that they had researched in their own time. Although work was carried out primarily with the Year 6 pupils, to finish off the Polar Explorer Programme the school held a whole-school Polar Explorer Day using many resources from *The Polar Explorer Cookbook*. The bannocks were eaten during the end-of-the-day assembly, when the Year 6 class also shared the fantastic work that they had been producing.

CASE STUDY 2:

Working with Parkstone Primary School in Hull

Bryony worked with Beckie and her Year 2 (teaching children aged 6-7) colleagues. Following a Polar Explorer CPD day, they decided to adapt the resources from *The Polar Explorer Cookbook* to make an exploration-themed day as part of their wider Polar topic.

Having already baked sledging biscuits from the book, which whipped up their excitement, Polar Day began with an assembly from Bryony who introduced the children to the new Royal Research Ship (RRS), the Sir David Attenborough, and the work of the British Antarctic Survey in the Arctic and Antarctic regions. The activities that followed included:

- tasting a selection of rehydrated foods such as couscous, porridge and dried fruit;
- designing an appropriate way to protect the food during transportation – in this case, the food was a raw egg! Children packaged the egg in all sorts of edible materials, from Rice Krispies to flour, thus reducing waste when it arrives in the Polar region!
- testing their packaging – out in the playground, the much-anticipated 'long drop' test awaited, where almost all the packages survived being dropped from a height; and
- designing and making sledges for transporting food packages. In the afternoon, the food packages met their final fate where they were dragged around three laps of the sledging assault course in carefully-designed sledges. Much to everyone's relief and excitement, the food parcels arrived at their destination intact!

Beckie's story

When we got involved in the Polar Explorer Programme (PEP), we decided to go all out! We linked it to a whole term of work and called our brand-new topic 'We are Polar Explorers'. The main aim was to improve gender attitudes towards STEM subjects, as the PEP questionnaire showed that attitudes of all children towards females in STEM subjects and careers were not all as positive as we would like.

We linked many areas of the curriculum to our topic, such as:

English	Writing information texts
Art	Creating polar fish
DT	Making fishing rod winding mechanisms
Geography	Locating the Polar regions and looking at the changing ice caps over time
Computing	Using algorithms to get 'Boaty McBoatface' back to the ship
Links to other areas of science	Researching living things and food chains in the Polar regions and looking at how living things have adapted to this habitat

We also compared a famous local fishing trawler (the Arctic Corsair) to the new RRS Sir David Attenborough. Other enhancement opportunities included a Polar movie night and a 'penguin waddle' around the school field to raise funds for our school trip to see real penguins! When Bryony joined us, she brought some ski clothes for

the children to try on. They enjoyed comparing the features of their own gloves to the gloves needed for Polar conditions. The real Polar Explorer character profiles brought the activities to life and, after carrying them out, the children wrote letters to the STEM professionals to tell them about their findings.

The whole of Key Stage 1 (ages 5-7) took part in the programme and the children got so much out of it that we have made it a permanent annual topic. The practical activities from the PEP resources are easily adapted to make them appropriate for the needs and interests of younger children.

The outcomes for our school included:

- Children were immersed in their learning and there was a buzz of excitement at home as well as at school;
- The real Polar Explorer character profiles brought the activities to life and the activities enabled the children to imagine being an explorer and to engage with the challenges that they face; and
- Attitudes towards females in STEM careers improved.

Accessing the resource

We hope that you are inspired to try The Polar Explorer Cookbook. The resource is free to download here:

www.stem.org.uk/resources/elibrary/resource/445111/polar-explorer-cookbook

You can find out more about the Polar Explorer Programme here:

www.stem.org.uk/welcome-polar-explorer-programme

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Lots of interest in the PSTT stand in the exhibition hall