

Lesson Background

Communication

Explorers today rely heavily on modern means of technology for communication, whereas explorers in the past managed to reach their destination without this support. Early explorers used the position of the stars and the sun to guide them as well as compasses. They had no contact with people from home for many months or years. Modern explorers use instruments such as GPS, satellite phones, compasses, radio communication, email and internet. If they take the right equipment they can get daily weather reports and satellite images for wherever they are. They can report their position or send automatic signals of their location.



Clothing and gear

Some early polar explorers followed the clothing systems of the Inuit who could live very comfortably in their clothing which was cleverly created out of skins. Modern clothing is a lot lighter to wear but still tries to copy the ability of skins to 'breathe', be waterproof, windproof and highly insulated.



Camping equipment has benefited enormously from the development of light and strong metals and plastics. Sleds, tents, stoves, skis, cups, sleeping bags, sleeping mats and just about everything else are much lighter and stronger.

The North Pole boot system is similar to that used by Norwegians over hundreds of years. The warmth is created by the felt, wool Katanker and the system of liner socks – one of which is a plastic bag or 'vapour barrier liner' which doesn't allow the foot's perspiration to get into the insulation layer. A dry insulation layer will be warm even though the foot will be a bit soggy and come out of the boot looking a bit like a prune. A home made overboot (above) adds insulation to the system.



Food

Food needs to provide the greatest number of kilojoules for the least amount of weight. In the past the explorers would take pemmican which is made of rendered fat mixed with ground meat, vegetables and berries.



Modern explorers take packets of freeze dried foods. These meals provide an exceptionally nutritious meal.

Modern Limitations

Technology brings many benefits but can fail or not perform as expected. The satellite, phone and internet systems don't always work. Batteries required to power the equipment are heavy and can fail in the cold weather. Parts can break as they become brittle in the cold weather or affected by the conditions (moisture, cold). Satellite systems can go down.

Even though individual items are lighter modern explorers often take more gear than the early explorers did. We expect to be more comfortable and to be able to communicate much more often. So the weight of the sleds is still heavy and the explorers are less able to make do without the sophisticated equipment.



“Modern clothing materials. One of the greatest advancements in outdoor clothing is the development of ‘breathable waterproof’ material. A breathable, waterproof fabric will let perspiration out but not let rain in. This means that the person will not get wet on the inside of their raincoat as they sweat while exercising. Plastics and rubber which are very waterproof don’t breathe at all. Getting wet on the inside of your jacket is unpleasant and can be very dangerous if the conditions are cold as the moisture makes the person even colder.

With very little exception modern outdoor gear is lined with a version of this fabric.

However in polar conditions it is not important for clothing to be waterproof – as the temperature is too low for water to be a problem. Dry snow will simply brush off. In fact the cold temperatures affects the modern fabrics to the extent that they don’t breathe – the cold closes up the fine holes. So someone going to the Poles needs to find older style fabric. Simple, tightly woven cottons or nylons that are windproof but not waterproof so they still let perspiration out, are ideal. This is very difficult as clothing is not made for these types of climates except in the far north of places like Canada, Alaska, Norway. The popularity of the waterproof and breathable fabrics, and fact that clothing shops now all sell the same gear no matter where in the world you are means that it is very difficult to get the more suitable, but less advanced, clothing appropriate for the Polar regions.” - Linda Beilharz

Outcomes

Students will develop an awareness of various forms of technology and how modern expeditions are affected by their use. Technology has changed communication, equipment weight and strength, food options and navigation. With technology there are changes to the experience of the journey with positives and negatives that reflect social expectations and notions of ‘adventure’.

Preparation

1. Invite a speaker (outdoor educator, adventurer, police person, farmer) to explain the communication technology or locate information that explains the system. (Satellite phone, solar panel, battery pack, connecting leads, PDA or small computer, camera).. Show students examples of all the various forms of

technology that Linda used on previous expeditions. Ask them to identify which technology they use in their every day lives.(The systems are very similar to modern day mobile phones which can send emails, photos and messages or voice. The phone service is via satellite and the system is more likely to be as a series of gadgets connected up with cables rather than located in one gadget or wirelessly connected. There is currently only one satellite system, ‘Iridium’ ,over the poles so many gadgets we use in Australia – like some GPS tracking devices – are not appropriate.)

2. Purchase a dehydrated, packaged meal. Collect samples of packaged food.

Student Activities

Student Activity 1.

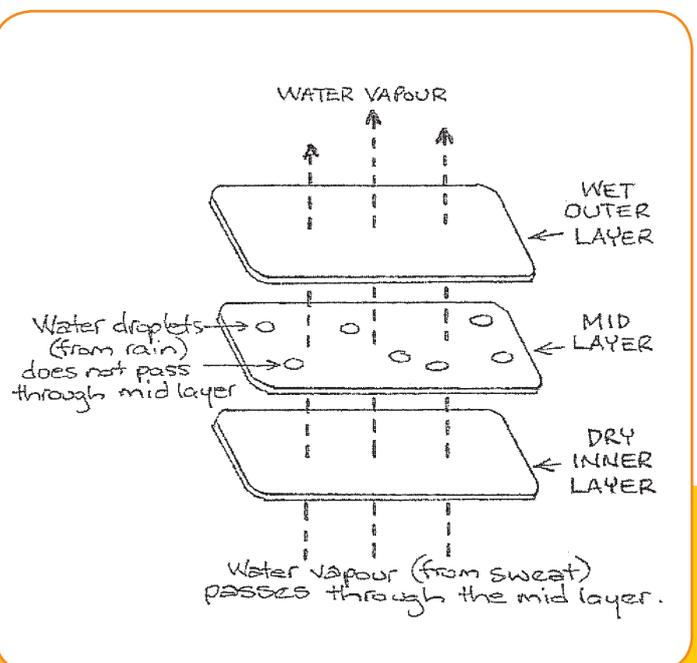
Students are to generate a list of items an expeditioner would take. Create a Venn diagram with these two headings: Modern Explorers and Historical Explorers.

Students will fill in all the technologies that they use. The ones in the overlapped section will be used by both modern and historical explorers.

Student Activity 2.

Cook a dehydrated bushwalking meal for the students and have a taste test. Ask students to describe the taste of the meal and consider the nutritional value of the meal. Explore what freeze drying is in comparison to other methods of dehydrating food.

Use a dehydrator to dry slices of fruit and vegies. Notice how the water content changes the length of drying time required. Taste them dried and after sitting in water again for a few hours.



Student Activity 3.

Make a list of all the clothing worn by an Arctic/Antarctic explorer. What did the Inuit people wear? What materials are modern and which ones are traditional? How has technology improved the qualities of these fabrics and materials?

Students can test a clothing system by dressing in a wicking layer, an insulating layer and a windproof layer, recording their impressions in a journal or blog.

Extension

Debate: Does technology make things better or more complicated?

Compare the diet of an astronaut to that of an Arctic explorer.

Find out how dried food is still adequate to provide vitamins and minerals – and prevent scurvy.

Research developments into creating better materials for clothing in extreme conditions.

Design a water proof bag to store food and be used as a bowl.

Design an 'instrument' to be used on an expedition in the future. What sort of equipment would you need for space / under water / desert exploration?

Resources

Discovery Centre, 7 Railway Place , Bendigo,
(03) 5444 4400, fun@discovery.asn.au

Contact the Education officer for a list of the kits that can be borrowed by teachers. A kit called "Olympic Fabrics" analyses different fabrics.

Attachments

Interview with Erling Kagge – an Expeditioner's philosophical thoughts on the impact of technology.

Comparing Scott and Amundsen – a brief discussion and links to websites that compare the clothing, food and travel styles of Scott, Amundsen and modern expeditioners

Benchmarking Historical Clothing – a copy of a powerpoint presentation with images and information comparing early explorers clothing systems.

Typical Expedition Menu – list of food that the expeditioners would have with them.

Arctic Clothing List and explanation of the 'clothing system'.

Diary extract – No Longer Under the Radar (a personal response to the impact of communication technology)

ABC role – description of the role of the Australian Base Communications group

Notes for Dispatches to ABC – codes for sending brief messages (satellite SMS) to the ABC group

Links

Communication Kit - A description of the communication kit being used by Linda Beilharz on her expeditions. Look at the 'North Pole package'

<http://www.humanedgetech.com/shop/home.php?cat=10>

Iridium satellite system website

<http://www.iridium.com/about/howitworks.php>

Argos system - a gps unit that uses the Argos satellite system. This system is taken as a back up communication device as it sends frequent messages about location and status of the expedition team. Argos beacons have a great number of applications including tracking birds and animals.

<http://www.argos-system.org/>

Inuit

<http://www.athropolis.com/links/inuit.htm>

