THE WINTERTON FEDERATION MEDIUM TERM PLAN SCIENCE Spring 1 Term YEAR 1

Polar Places	Learning Objective	Activity – Switched On Science	STEM Activities	Success Criteria
Session 1	Describe the simple physical properties of a variety of everyday materials.	Use Google Earth to go on a journey to a polar region, e.g. Antarctica. Use ppt 1–8. Use a range of video clips, posters, books, etc. about the polar regions. Collect some key facts about either of the polar regions and share these with the rest of the class. Compare and talk about what is the same and different. Use a range of pictures or photographs of different areas on Earth, e.g. polar regions, deserts, tropical rainforests and sort them into their own categories and explain why. What sort of clothes do you think we would need to wear? Look at a photo of Scott dressed for his expedition and identify the clothes. Think about the climate. What clothes do they need, how much they can carry, e.g. warm, do they need, how much they can carry, e.g. warm, waterproof, lightweight? Make a list of the expedition materials needed and begin to discuss the properties of those materials. Explain and discuss the meaning of key vocabulary associated with properties of materials. Pupils could write a diary about A Polar Adventurer's Day		I can identify and classify regions of the Earth. I can recall properties of materials I understand the meaning of vocabulary associated with those properties
Session 2	Describe the simple physical properties of a variety of everyday materials.	Children choose from a selection of clothing to wear when role playing a polar adventurer. Offer a wide selection of suitable and unsuitable clothing. Once they have 'kitted' themselves out take a 'selfie' and write a sentence to say what the clothes are made from and why they have chosen them. Let the children handle and touch a range of materials, place them against their cheeks or neck and to sort into groups: Will keep a polar		I can identify materials clothing is made from. I can apply subject knowledge about materials and properties of materials to identify and classify into groups I can choose items of clothing according to the materials and their properties, e.g. because they are waterproof

		adventurer warm. Will not keep a polar adventurer warm. Give a range of words to choose from to place beside the materials, e.g. soft, thick, rough, smooth, cold, warm. Either take a photo or make a mini-book and cut a swatch of material to put in their book or use 'The polar adventurer' (Activity Resource 3.3) which has the outline of a polar explorer on which they could place swatches of material.		
Session 3	Describe the physical properties of a variety of everyday materials. Perform simple tests. Use their observations and ideas to suggest answers to questions.	Provide a wide variety of gloves, which they can be explored by trying them on, discussing them and classifying them, e.g.: Flexible: We can move our hands easily. Waterproof: Our hands stay dry Warm: Our hands stay warm. Ask 'how will we test which is most flexible, waterproof and warm.' They might suggest: Flexible: Wearing gloves and trying to write their name, build a tower with blocks, pick up some small pebbles, or the chocolate game – can they unwrap it with gloves on? Waterproof: Pouring water over the glove, picking something out of a bowl of water without their hands getting wet. Warm: Wearing gloves and picking up an ice cube comparing one glove against another. Discuss with children: Which gloves were the best and how do they know? What kinds of materials were used? Did they have any special features? This investigation can be extended to look at socks, hats, scarves, trousers and jumpers.		**I can use scientific vocabulary to describe materials** **I can classify materials** I can carry out a simple test and use observations to answer questions.
Session 4	Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. Describe and	Each group adopts a polar animal for the duration of the topic. Provide children with a choice so that they develop their understanding of a range of animals that live in these areas, e.g. polar bears, seals, penguins, sea lions, walruses, wolves, reindeer, narwhals, orcas, artic foxes, snowy owls. They will become experts about their adopted animal, researching information, including: Habitat / what it eats / life cycle / what		I can name some animals and say if it has fur. I can name a range of animals and can talk about obvious differences, e.g. beaks, legs, fins. I know which animals live in polar areas and can describe similarities and differences in their structure

	compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets). Identify and name a variety of common animals that are carnivores, herbivores and omnivores.	special features it has so it is able to survive the cold / what its young are like / how it moves / what eats it. Research the information using simple information books; pictures etc. Then create own leaflet/poster with an annotated image of their chosen creature. Focus attention on finding out the following: The structure of animals, e.g. paws, beak, ears, teeth, fins, claws. Whether the animal is a carnivore, herbivore or omnivore. Whether the animal is a fish, bird or mammal. Ensure all children understand the vocabulary being used.		
Session 5	Identify and name a variety of common animals that are carnivores, herbivores and omnivores.	Ues PowerPoint Slides 17–18 to introduce and discuss this topic. Show children video clips that help them to understand why some animals, e.g., polar bears and Artic hares, use camouflage. Challenge children to explain what would happen if a polar bear or Arctic hare was red or black. Children might say that other animals would see them and get away, so extend their thinking in terms of consequences, so that children YOU WILL NEED PowerPoint Slide 17–18 Video clips of various animals Art materials ASSESSMENT Subject Knowledge Em. Children can say what animals eat, e.g. meat or plants. Exp. Children can say whether an animal is a carnivore, omnivore or herbivore. YOU WILL NEED Activity Resource 3.4 PowerPoint Slides 15-16 Plastic animals or photographs of animals Three baskets Labels ASSESSMENT Subject Knowledge Em. Children sort the animals by their observable features and may say which eat other animals, e.g. polar bear. Exp. Children sort animals into carnivore, herbivore and omnivore and can say what each animal eats. Exc. Children are familiar with the idea of carnivores, herbivores and		I can sort the animals by their observable features and may say which eat other animals, e.g. polar bear. I can sort animals into carnivore, herbivore and omnivore and can say what each animal eats. I can are use given criteria to identify and classify animals.

		omnivores and show more extensive knowledge talking about, for example, polar bears eating seals and seals eating fish. Working Scientifically Em. Children require support to identify and sort animals. Exp. Children are able to use given criteria to identify and classify animals. Exc. Children apply subject knowledge to identify and classify. 2 AM I A HERBIVORE, CARNIVORE OR OMNIVORE? L.O. Herbivore, carnivore and omnivore are words that describe what an animal eats. Humans are omnivores and eat both meat and plants. Polar bears are carnivores and eat meat, whilst an Arctic hare is a herbivore and eats plants. Sort animals into these classifications. Use collections of plastic animals or photographs of animals and sort into three baskets labelled 'carnivore', 'herbivore' and 'omnivore'. Scaffold the language, place a picture of an animal that children will be familiar with on each basket, e.g. lion, rabbit and human. Use Activity Resource 3.4 and the online interactive activity to reinforce learning. What would happen if a Polar Bear was black? If this happens the animals will be unable to catch the other animals and would starve. Create an Arctic or Antarctic frieze and engage children in painting or other art techniques to create pictures of animals and show how they are camouflaged (or not) against the habitat. Link with prior learning about herbivores, carnivores and omnivores, asking children to think about the idea that a polar bear is a carnivore, so why does it need to be camouflaged? Ask what a hare is and why it needs to be camouflaged. Take pictures or plastic animals out into the school grounds or hide these for the children to find. Why are some easier to find?		
Session 6	To observe closely using simple	Give the scenario that the polar adventurers have stopped during their expedition to make a warm drink. This is a good small group activity where		I can carry out a fair test and record results I am beginning to use my

	equipment Various Small Group Activities	children work with an adult to make hot chocolate. At each stage, children could take photographs of the process and then use them to write a set of instructions for someone else to use. As they make the hot chocolate, ask children to observe closely what happens to the ingredients. Ask them what they think would happen if cold water was used instead of hot, then let them try and compare the results. Based on their observations, children suggest other questions, e.g. what if we used milk, less hot chocolate?		observations and results I can record data and answer questions about it.
Session 6	To observe closely using simple equipment	A packet soup mix is great for developing observation by challenging children to used hand lenses to observe the mix prior to cooking and then comparing how the soup mix changes when water is added. Before you start, check that no child has an allergy to packet soup Give children a sample of the packet mix to sort and classify the different vegetables that are in the soup. Encourage children to use their senses of sight, taste and smell. Children use a hand lens or digital microscope to look at the different dried vegetables. Ask them to sort the different dried vegetables into an empty ice cube tray or plastic containers and label them with the name of the vegetable. They could compare the dried vegetables with fresh. Children then pour warm water over them and watch how they reconstitute, then taste them, making comparisons before and after. Once they have explored the mix they could, with adult support, make soup for the rest of the class to eat. Discuss with children why polar explorers take dried food on expeditions and not canned or fresh vegetables to make their soup. Based on their observations, children suggest other questions, e.g. What if we left the mix in water for longer? What if we used cold water? Could we dry our own vegetables?		I can talk about the changes observed when the soup mix was added to water I can ask questions related to observations

Session 6	To observe closely using simple equipment	Think about what would happen if they only ate biscuits and chocolate on their expedition to a polar region. Would it be a good thing to do? Would it be good for them? People on polar expeditions take food that is good for them. Porridge is a good source of energy. It is rich in fibre and can help to fight infections, so is an excellent food to take on an expedition. It is also dry food and not heavy to carry and can quickly be made into hot food. Make porridge (remember to check any allergies), so that they can observe changes. Before you begin taste the oats so that they can compare them once cooked. Could also use a hand lens or digital microscope to look at the oats before and after cooking. Which is best: porridge made with normal milk, dried milk or water? What could we add to our porridge, to make it healthier, e.g. dried bananas, raisins, dried apple? Based on their observations, suggest new questions, e.g. What if we used cold water? Could we dry our own fruits?, and how to answer them		I can describe the changes observed when the porridge is cooked I can discuss ideas about why it changed. I can suggest new questions, e.g. What if we used cold water? Could we dry our own fruits?, and how to answer them