

January. The most miserable time of year. The month of taking down the tinsel, wet playtime drizzle and the unmistakable smell of damp socks going crispy on the radiator. If you've ever taught in a Portakabin or a Victorian redbrick, you'll dread those steamy windows, mud trails and darkness at both ends of the day. But even if Easter seems a long way off, you don't need to wait for spring to arrive before you venture outdoors once again. Take a leaf out of Denmark's book and join me as we investigate all things hygge with a little bit of winter science.

WINTER is coming

Take them outside in January? Are you kidding? Pull on the yellow wellies of science and join **Deborah Herridge** in embracing the great outdoors...



Today you will...

- > Learn about hibernation
- > Discover how people and animals keep warm in winter
- > Go outside and build a shelter and measure rainfall

Starter activity

It's time to have a duvet day. Bring in your toastiest slippers, scarf, hat and mittens and curl yourself up in a cosy, hibernation hut. This is an effective introduction to what some animals do in winter (and what some of us might like to

do too!). Explain to the children that some animals that live in colder parts of the world actually slow down so much over the winter months that they are almost asleep. They eat lots before winter to build up enough body fat to keep them alive in



their dormant state and they 'sleep' until the weather is warm enough for them to venture out to find food once more. This is called hibernation and is done by animals such as bears, hedgehogs and dormice.

Main activities

Blubber glove

Putting on a layer of insulating fat or blubber has other advantages too, particularly for marine animals facing the extreme cold of the polar seas. Demonstrate this with the blubber glove investigation. You'll need two buckets; one full of room-temperature water and the other with iced water (the more ice the better). Talk about what it might be like to swim in the water. Which would be colder? Ask a child to put their hand in a rubber glove. First put it in the warmer water, then briefly into the iced bucket. Get them to describe the differences. Now comes the gruesome part. Pack another glove with baking fat or margarine. Ask the child to put their hand into the blubber-filled glove (after first putting on a non-latex glove if necessary), then repeat the experiment. The insulating properties of the fat will mean that they won't feel the icy cold nearly as much as before and can keep their hand in the water for longer (not too long though!).

Fur real

Piling on the fat may make life warmer for polar bears but it's not the best idea for humans. What clothing will keep us warmest in winter? Examining the traditional outfits of people who live in the very coldest parts of the world or the kit of polar explorers might lead us to think that anything furry would be a safe bet, but are layers a better option? This is something we can test using hot water bottles filled with warm water. Present one bottle 'naked', one wrapped in fur and a selection of others with different numbers of layers of cloth. Use a child-friendly thermometer with a digital scale to register the temperatures of each to see

which is the warmest as time goes by. Are we best wearing fur or layers?

Venture forth

Now we know what to wear, it's time to venture outside. If you're lucky enough to have snow, there are a wealth of activities to enjoy. Put a coat on your snowman to see if he'll melt or stay solid, or find animal tracks and play 'snow detective' to discover which animal made them.

While some animals hibernate to survive winter, others such as hares, foxes and weasels adopt a winter white camouflage to stay safe and lengthen the odds of being seen in the snow. Ask team members to hide white objects in the snow (beware of footprints giving the game away!). Hide the same number of brightly coloured objects and time how long it takes the class to find both sets.

If it's raining outside – probably more likely than a blanket of newly fallen snow – let's not forget that anything wet can be dried, so all of the usual collecting and identifying activities can still go on. This time of year gives children a good opportunity to notice the difference between deciduous and evergreen trees. The latter should be particularly obvious now among their bare-stemmed cousins.

The new curriculum says that weather recording should be a major part of KS1 study. On average, December is the wettest month in the UK, with average rainfall of 80mm. January is only a couple of millimetres behind which makes the new year an ideal time to begin looking at rainfall and precipitation within the context of weather recording. Start 2017 with a resolution to collect weather data every day by creating your own weather recording station. Put pop bottle rain gauges and flags outside to measure rain and wind.



Extending the lesson

- > Rain is one of the most wonderful sounds in nature – when you're inside. Use rainy days as an opportunity to get out and test which materials make the best umbrellas or tents. Use transparent tarpaulins to create a rain-free retreat as you build your outdoor shelter.
- > Investigate how long it takes muddy puddles to dry up. What happens to the soil as it dries? This is an ideal opportunity to observe and measure changes over time.
- > When spring is on its way, cut out the centre of a paper plate and throw it out onto your school grounds. What natural treasures can you find underneath? How many colours can you see?
- > For the most ambitious or mindful among us, try the amazing Japanese practice of hikaru dorodango. This involves making balls of sieved mud and dry earth which over time and with polishing take on a shiny lustrous surface. Find instructions on how to make these incredible objects at muddyfaces.co.uk/infodocs



ABOUT THE AUTHOR

Deborah Herridge is the author of Pearson's new Science Bug programme and a partner in Primarily Science, delivering science CPD nationally and internationally.



USEFUL QUESTIONS

- > What is it about winter that makes it such a distinct season?
- > What can we see in winter that we don't see at other times of the year?
- > What British animals hibernate? Ask children to research and feed back.

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