Seasons – the story for teachers

Scene setting within the science curriculum is particularly important; teaching concepts within this context will clearly set in place ideas that can be revisited and built on in later years. There are fundamental ideas explained here that will help you to appreciate links to later understanding.

What are the four seasons?

This introductory lesson is based on constructivist principles building on the children's pre-existing knowledge. This will include experience of different places near and far. A number of factors affect the length and severity of summer and winter. These include latitude, distance from the sea (continentality) and height above sea level. Edinburgh and Moscow are roughly the same distance from the equator, but have very different climates. Children will have visited different places and should be asked to recount their weather memories.

What weather do we expect at different times of the year?

The weather varies from day to day. When we describe 'typical' weather we must be careful not to set in place ideas that all winters in Britain bring low temperatures and snow, or that summers are warm with unbroken sunshine. Children will realise the variability of our weather through direct measurement in later years.

Why do we have seasons?

The axis of the earth is tilted at 23 and a half degrees. As it revolves around the sun, the tilted earth gives us the four seasons. The amount of the sun's radiation received at the surface of the earth depends on the sun's altitude, which is the angle between the sun's rays and a tangent to the earth's surface at the point of observation. The sun's altitude is higher in summer, which means the radiation per unit area is more concentrated. At the summer solstice in the northern hemisphere, the sun is directly overhead at 23 and a half degrees North (the Tropic of Cancer) and the length of daylight is at its maximum. The apparent migration of the overhead sun gives rise to the autumnal and spring equinoxes, when the sun is overhead at the equator, and the winter solstice when it is overhead at the southern Tropic of Capricorn.

New words

thermometer – an instrument used to measure temperature

heat – a form of energy arising from the random motion of molecules

temperature – a measure of the degree of heat held within a substance

insulation – protecting a substance so as to slow down the loss or gain of energy

Seasons – lower primary

By using a range of materials and activities, we aim to focus on these outcomes and targets:

Pupil Learning Outcomes

- There are four different seasons: spring, summer, autumn and winter.
- We expect different weather in each season.
- Warm air is trapped under warm clothes.
- Plants need light, warmth, water and shelter to grow.

Scotland: 5–14 Environmental Studies

People and place: The physical environment

- Level A: describe the main types of local weather, including seasonal change, and how it
- affects their own lives.
- Level B: describe main weather elements and some effects on people's everyday lives.

Earth and space: Earth in space

- Level B: associate the seasons with differences in observed temperature.

Skills in science – investigating

- Level A: make suggestions and contribute to the planning of simple practical explorations.
- Level A: carry out simple observations and measurements.
- Level A: answer simple questions about what happened.
- Level B: use simple equipment and techniques to make observations and measurements.
- Level B: make suggestions about what might happen.

Skills in social subjects – enquiry

- Level A: process/classify simple information.
- Level A: suggest ways of finding answers to given questions.
- Level B: process/classify simple information in a variety of ways.

England and Wales National Curriculum

Geography

Key Stage 1

- 1b: observe and record
- 2a: use geographical vocabulary
- 2b: use fieldwork skills
- 4b: recognise changes in physical and human features
- 7a: study at a local scale
- 7b: carry out fieldwork investigations outside the classroom

Science – scientific enquiry

Key Stage 1

• 1: know that it is important to collect evidence by making observations and measurements when trying to answer a question.
• 2c: think about what might happen before deciding what to do.

WALT

We are learning to …

Describe the four seasons and predict what type of weather we can expect for each one.

Phase 1 Overview

Establish the children's prior knowledge:

- What are the four seasons?
- What sort of weather do we expect in spring/summer/autumn/winter?
- Why do we have seasons?

Phase 2 Input

Read one of the stories from the following collection to the class:

The Four Seasons of Brambly Hedge by Jill Barklem, ISBN 0 001840 26 6

Discuss the different types of weather we experience in different seasons. Talk about the different things we do at different times of the year, e.g. playing in the garden in the summer, kicking piles of leaves in autumn, sliding on the ice in winter and splashing in puddles in spring.

Weather bear

What you need:

- a teddy bear
- several different outfits for the bear, e.g.
  - a coat
  - a scarf and hat
  - a woolly jumper
  - a t-shirt and shorts

Introduce the class to the weather bear. Explain that he will be visiting the classroom for a while and the children will need to dress him in appropriate clothing according to the weather. He can go out to play with the children and they must decide if he needs a coat! He can go home with the children if they are doing something exciting, such as going to brownies, visiting a relative, or going to the beach. When weather bear goes on an adventure he must be dressed appropriately and photos can be taken to show him in his different outfits. This should then be related to the seasons.

Photographs showing types of weather you can get in different seasons are included in the activity download that accompanies this.

Phase 3 Process

Spring – Growing seeds

Spring is the time of year when plants begin to grow. The change in weather allows this to happen. At this time of year the temperature rises, rain falls instead of snow and the sun comes out.

What you need:

- cress seeds
- four pots
- compost

Fill the pots with compost. Plant the cress seeds.

Put one in a bright, warm area, e.g. the window-sill, as a control.

Put one next to it but don't water it, to demonstrate the need for water.

Put one in a dark cupboard to demonstrate the need for light.

Put one outside in a cold but bright area, to demonstrate the need for warmth.

Over the next few weeks watch the differences in the pots.

- Which is growing the fastest?
- Are any not growing at all?

Summer – Air conditioning

In summer, it can get hot and sticky. Sometimes people use air conditioning, especially in their cars.

What you need:

- a fan
- a tray of ice
- blindfolds

Ask the children to stand in front of the fan and turn it on. Ask them to describe how it feels.

Now place the tray of ice directly in front of the fan so that the air blows over it. Ask the children to stand in front of it again and turn it on. What difference do they notice?

This can be repeated blindfolded and the children can guess whether there is ice or not.

Air conditioners work in a similar way and cool you down on hot summer days.

Autumn – Language/crafts

In autumn, the leaves change colour and fall off the trees. The weather becomes quite changeable and we often have rain and wind. Leaves can be collected and sorted and used for:

- language activities such as poetry and descriptive writing.
- maths activities such as counting and sorting.
- arts and crafts activities involving collages, autumn colours, leaf printing, leaf rubbings, etc.

Winter – The woolly can

In winter, it becomes cold and we need to wrap up warm. Woolly clothes are good to keep you warm.

What you need:

- two open tin cans, clean and without labels
- hot water (hot to touch)
- a woolly hat
- a thermometer (optional)

Fill both cans with hot water. Carefully place the woolly hat over one of the cans. Leave the cans to sit for 15–30 minutes. Carefully remove the hat and compare the water temperature in each can by putting a finger in. A thermometer can also be used to take the temperature depending on the age of the pupils.

Phase 4 Review

Points for discussion:

- Name the four seasons.
- What weather should we expect in spring/summer/autumn/winter?