



KS1 Outdoor Science Opportunities



Plants

Leaf comparison



Task your pupils with collecting a range of different (fallen) leaves.

Using large PE hoops or similar, ask pupils to sort the leaves in any way of their choosing. This could be into two separate groups, or they could create an overlapping Venn diagram. Encourage pupils to create their own category headings and to sort the leaves in more than one way.

Once pupils have been introduced to the idea of **deciduous** and **evergreen** leaves, they are then challenged to sort the leaves they have collected under these headings.

Depending on the season/time of year, pupils could then return outside to search for signs of new growth/changing colours/large piles of leaves on the ground.

N.C. statement: identify and name a variety of common wild and garden plants, including deciduous and evergreen trees (Year 1)

Deciduous



Evergreen



Structures of plants

Spend time outside looking for the different structures that pupils have learnt about common flowering plants and trees (leaves, roots, branches, stems and flowers).

Pull up plants that have been **identified as weeds** and use this as an opportunity to look at different roots.

N.C. statement: identify and describe the basic structure of a variety of common flowering plants, including trees (Year 1)



Growing herbs



In groups, pupils plant a selection of herbs in pots and consider the requirements they need to grow strong and healthily.

If needed, they could also transfer these outside if they grow large enough.

Smelling the herbs can tie in with Year 1 learning about **senses**.

N.C. statement: observe and describe how seeds and bulbs grow into mature plants (Year 2)



Plant identification



Use photos/ID sheets to name and identify plants, leaves, trees and/or flowers in your outdoor area.

- Do pupils notice anything about where particular plants grow?
- Why might some plants be more suitable to certain areas of your site?

Bring in a range of seeds and bulbs for pupils to look at. Can they name any?

Ask pupils to study plants or bulbs closely and make observational drawings of these.



N.C. statement: identify and name a variety of common wild and garden plants, including deciduous and evergreen trees (Year 1)

Links to ID sheets available on site

Glove germination



Do plants need soil to grow? This investigation allows pupils better visibility of seed germination and to experience the different rates at which different plants start to grow.

Provide pupils (in groups) with a plastic glove, cotton wool and 5 different seed types. Wet the cotton wool and place this in the bottom of each of the glove fingers. Add a different seed type to each and put these somewhere with access to light. Write on the fingers which seed type is in each. Hanging the gloves from a washing line if you have these in your classroom is ideal, or taping them to a window. Pupils will be able to observe the seed changes on a day-to-day basis and note any differences between the samples.

You could also do this investigation with different variables, e.g. keeping the seeds the same but changing temperature, light or amount of water. This will help pupils to describe a plant's needs, as specified in the related N.C. statement.

N.C. statement: find out and describe how plants need water, light and a suitable temperature to grow and stay healthy (Year 2)





Animals including Humans

Outdoor senses



Focus on each sense while outside: what can you see, hear, feel, touch, taste?

Notice that we can experience things with different senses, e.g.:

☀️ “I can’t really taste the sun, but I can feel it is hot on my skin.”

💨 “The air doesn’t taste of anything, but I can feel it in my mouth.”



N.C. statement: identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense (Year 1)

Outdoor senses continued



For more opportunities to head outdoors and experience nature using the senses, see our **ZSL 5-minute activities for Nature Connectedness** slides and accompanying resources on the Biodiversity webpage.



N.C. statement: identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense (Year 1)

Identifying animal groups



As part of your learning on the vertebrate groups, head outside and task your pupils with identifying and classifying any animals they come across in your school grounds. You may wish to create tallies of the different species/groups you observe.

Discuss which groups you expect to find examples of and the specific species, plus the groups/species that you are unlikely to see on your school site, e.g. fish. Can pupils explain why this is?

N.C. statement: identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals (Year 1)



Link to vertebrate mats available on site

Diets



Create a list or tally of all the different animals found around your outdoor site. This could include both physical sightings and evidence that an animal has been in a particular area.

Can pupils sort the identified creatures as to whether they are carnivores, herbivores or omnivores? This could be done back in the classroom or continue to work outside using whiteboards.

Can pupils find any evidence around the site to prove or support their answers?

N.C. statement: identify and name a variety of common animals that are carnivores, herbivores and omnivores (Year 1)



Links to ID sheets available on site

Diets continued



Using the examples of wildlife found outside in school grounds, ask pupils to describe or draw pictures of what things these creatures might like to eat.

Pupils might start to spot patterns, such as animals that eat the same types of food. If it hasn't been already, introduce the concepts of predator and prey.



N.C. statement: identify and name a variety of common animals that are carnivores, herbivores and omnivores (Year 1)

Sorting animals based on their structures



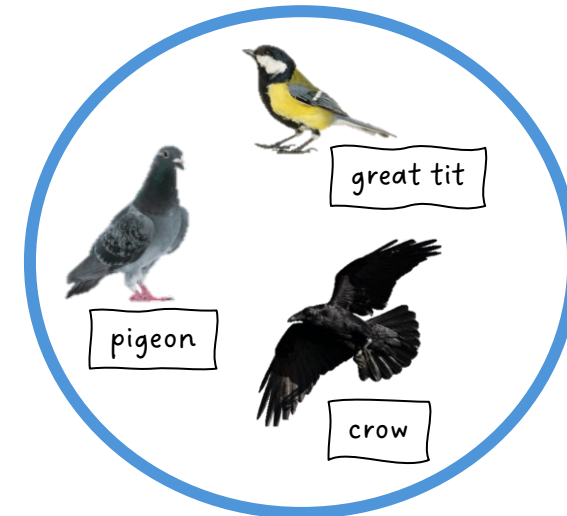
Set up large hoops outside for pupils to sort animals into.

You could use examples of animals spotted around your site; provide a range of animal cards/animal names written on whiteboards; or ask each pupil to write down an animal of their choice.

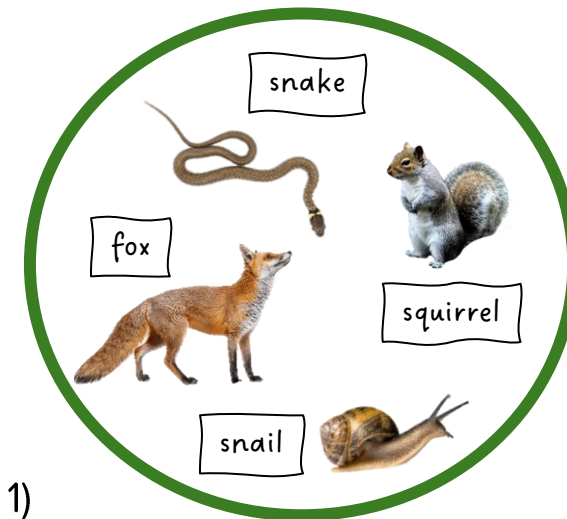
Some example headings for the different hoops could include:

- Number of legs (e.g. 0 legs, 2–4 legs, 6+ legs)
- Wings/No wings
- Fur/Scales/Feathers

N.C. statement: describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets) (Year 1)



Wings

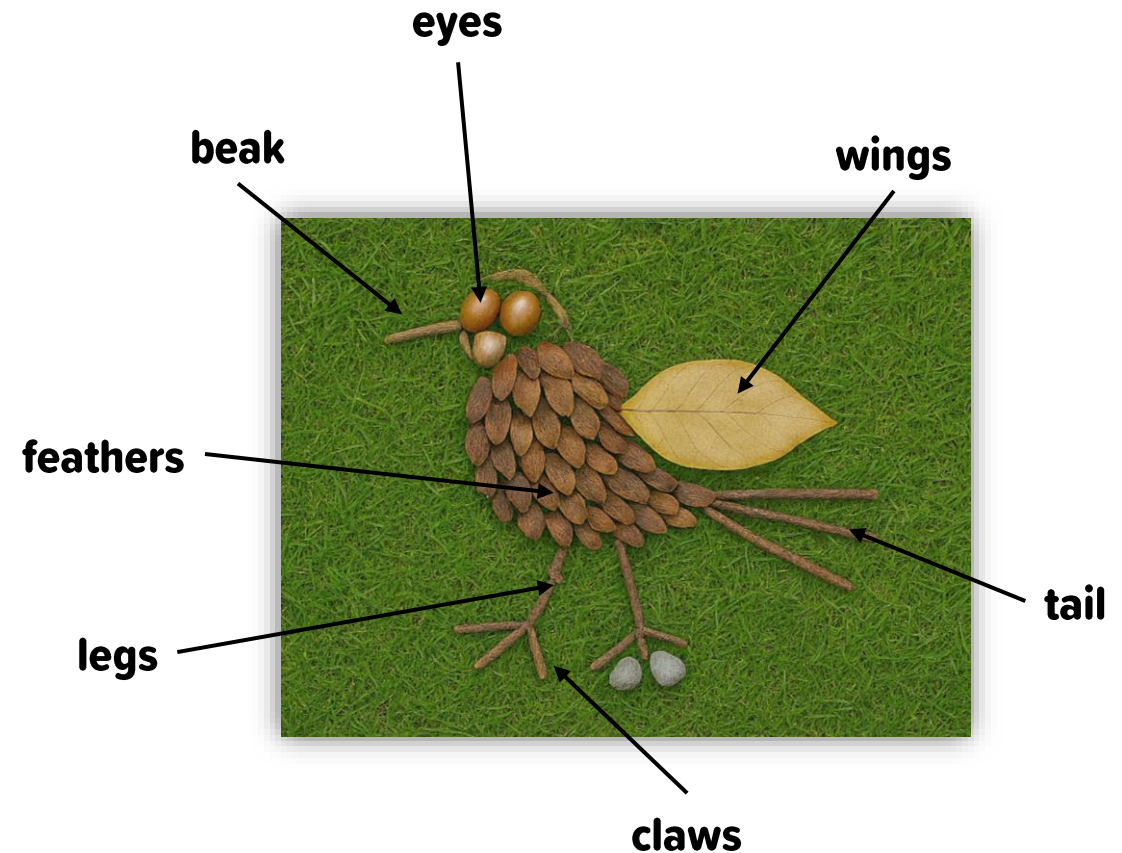


No wings

Animal structures



Use natural resources in your outside area to create different animals you have studied. Pupils could either label the different body parts using chalk or whiteboards, or they could explain what each part represents to a partner.



N.C. statement: describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets) (Year 1)

Offspring hunt

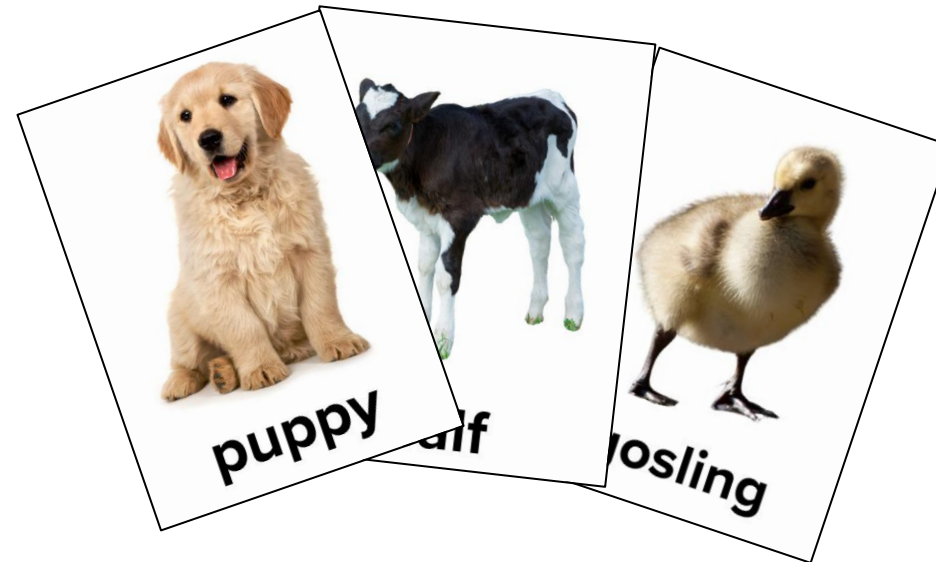


Place pictures of different animals' offspring around your outdoor area for pupils to find. They have to match these to the correct adult on an identification sheet.

Offspring Hunt 

Identify which offspring that you find belong to these adults:

Adult	Offspring
 dog	
 cow	
 goose	
 frog	
 horse	
 butterfly	
 chimpanzee	



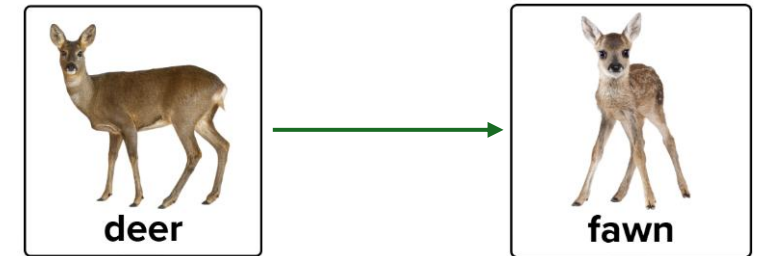
N.C. statement: notice that animals, including humans, have offspring which grow into adults (Year 2)

Worksheets available on site

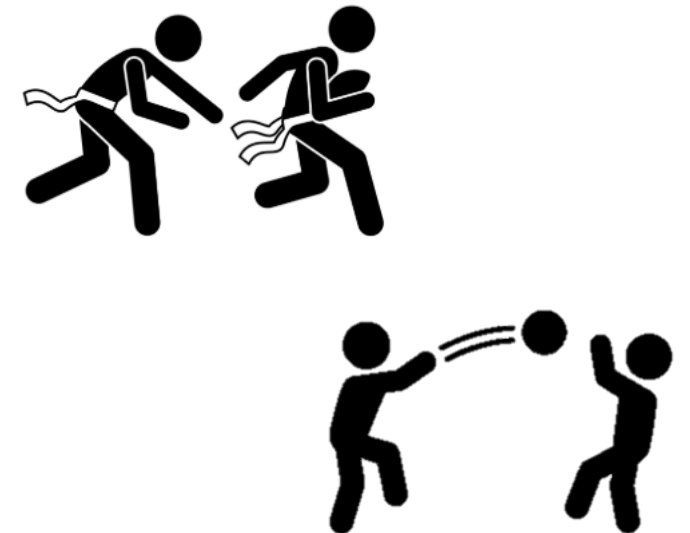
Offspring games



- Set up a relay where each team has a selection of pictures of different adult animals. Each pupil takes a picture, then runs to collect the related offspring.
- Attach adult and offspring names to tag rugby resources. Make sure there are more offspring names so that each 'adult' animal has to catch the tags of multiple offspring.
- Get your pupils to form a circle and stand in the middle with a ball. Say an adult animal and throw the ball to a student, who then has to respond with its offspring, or vice versa.



Picture cards available on site



N.C. statement: notice that animals, including humans, have offspring which grow into adults (Year 2)

Physical activity



As part of their learning on why exercise is an important part of keeping healthy, take pupils outside to investigate, using themselves as the subject matter.

Carry out simple tests, such as finding out how many star jumps, bounces, balancing steps, hops, stretches, etc. they can manage in 1 minute. You might want to let pupils come up with their own physical activity suggestions.

While resting between each activity, provide pupils with something (e.g. a prepared table) to record how the different physical exercises made them feel and to consider which parts of their body they are using for each.

N.C. statement: describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene (Year 2)





Materials

Objects and materials



Take pupils outside to look at different objects around the school site. Can they identify what these different objects are made from?

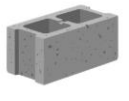
You can use the information gathered during this task to support the next series of activities: 'Outdoor materials and properties' and 'Classifying materials'.

Objects and materials ZSL

What materials are the different objects in our outdoor area made from?
An example has been done for you:

Object	Material(s) it is made from
Drainpipe 	Plastic

Materials ZSL

 glass	 metal	 plastic	 rubber	 wood
 rock/stone	 brick	 sand	 fabric	 concrete

N.C. statement: distinguish between an object and the material from which it is made (Year 1)

Worksheet and word mat available on site

Outdoor materials and properties

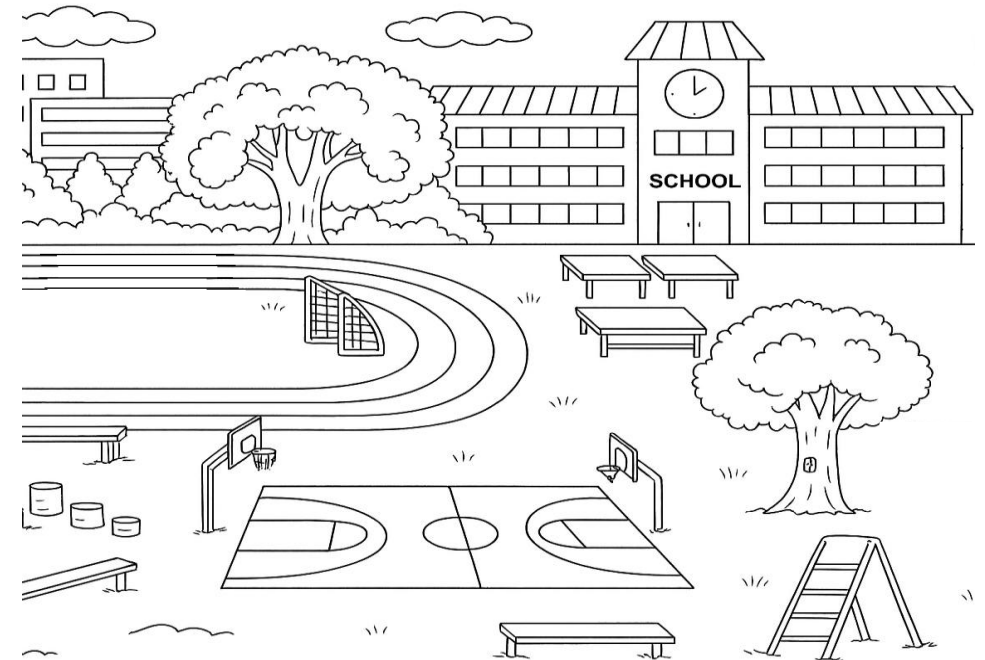


Investigate materials used for objects in your outdoor area. Encourage pupils to explain the materials' properties and why they have been chosen for certain jobs: e.g.

Why are the plant boxes made from wood but not the roof?

Why aren't the windows made from the same materials as the bike racks?

Ask pupils to suggest which materials they would use if they were to design their own playground and why.



- N.C. statement:**
- identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock
 - describe the simple physical properties of a variety of everyday materials (Year 1)

Classifying materials

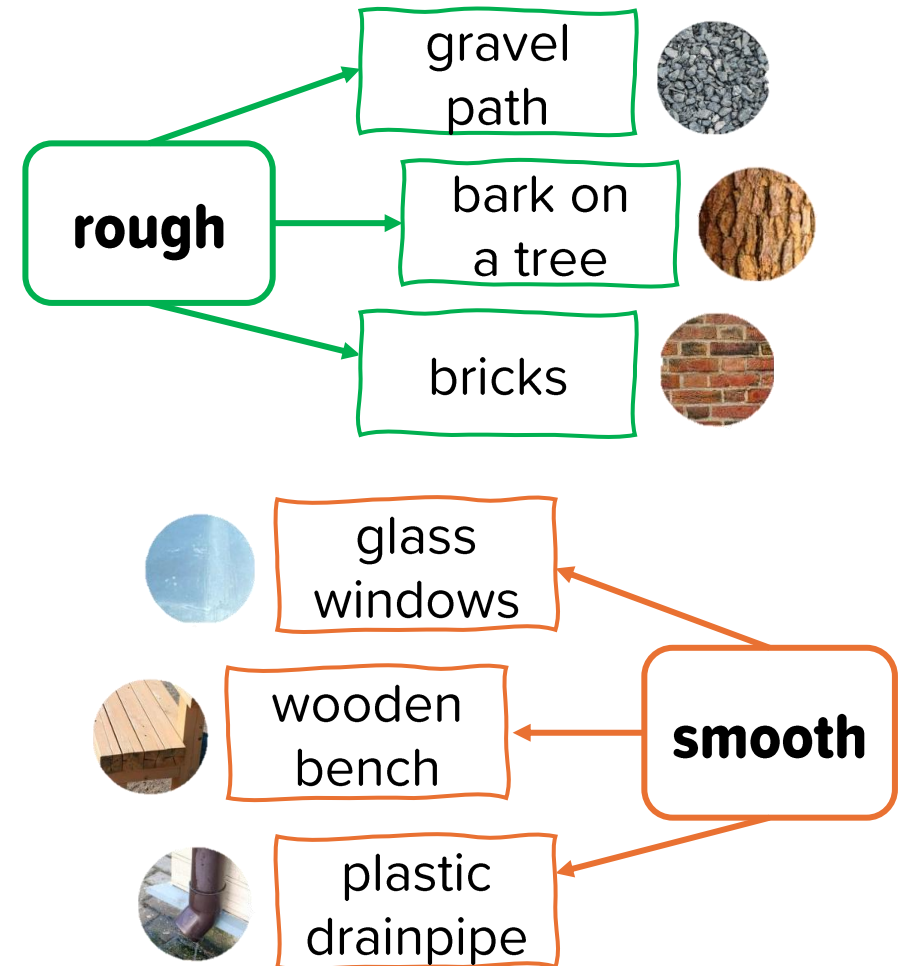


Take pupils outside to identify as many different materials as they can find. These could be recorded on whiteboards or take photographs.

In groups, either outside or back in the classroom, ask pupils to sort the materials they have identified in a manner of their choosing, based on the materials' physical properties. For example: rough/smooth; hard/soft; waterproof/absorbent; flexible/rigid, etc.

Then investigate whether certain materials are more likely to have certain properties than others.

N.C. statement: compare and group together a variety of everyday materials on the basis of their simple physical properties (Year 1)



Identifying properties of materials



Provide pupils with a list of objects and the materials they are made from that you can find around your school site (see the example opposite).

Allow pupils to explore these objects for themselves and to take (where possible) a sensory approach to identifying the properties of the materials used to make each object.

You could discuss as a group why these materials were suitable choices for each object or ask pupils to individually record their thoughts on this. You may also want to reflect on why certain materials wouldn't be appropriate to make these items.

Object	Material	Properties
window	glass	transparent, rigid, heavy, hard, smooth
drainpipe	plastic	
building	brick	
bench	wood	
climbing frame	metal	

N.C. statement: identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses (Year 2)

Choosing suitable materials

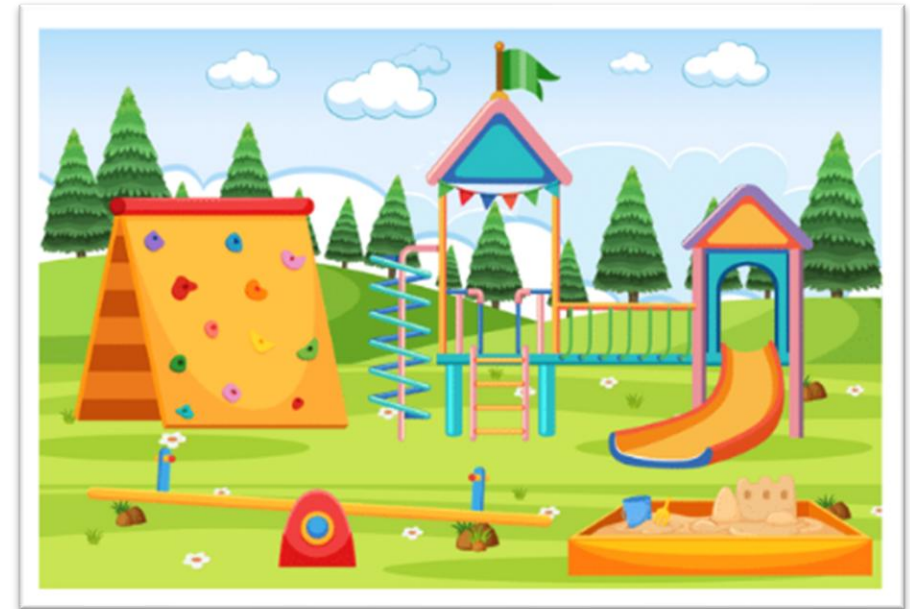


Ask pupils about their ideal school playground – what would they want to include?

Using knowledge of the school's outdoor area (including patches which are more exposed to the weather), challenge pupils to write short presentations about which materials they would use to make their dream playground items. They must explain clearly why they have chosen the material(s), focusing on the material's properties and why it is suitable for a particular use.

Pupils could then present their reasoning to the class in front of the proposed area for their new object.

N.C. statement: identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses (Year 2)



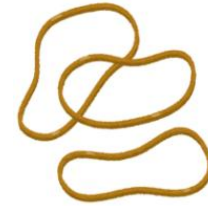
Changing materials' shapes

Explore squashing, bending, twisting and stretching with items such as playdough, sand, shaving foam, sponge, rubber gloves or bands. Doing this outside helps avoid potential mess in the classroom!

Question pupils why it is useful for some items to return to their original form after being squashed, bent, twisted or stretched (e.g. a rubber glove), and why it can be useful for an item to retain its new shape after undergoing these forces (e.g. dough).

Can they identify further objects outside that change shape by being squashed, bent, twisted or stretched and those that cannot?

N.C. statement: find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching (Year 2)



Tent material



Which properties are most important when choosing the best material for a tent? Brainstorm as a class. You may consider ideas such as material that is waterproof, breathable, strong (i.e. won't rip), light to carry, warm.

Ask pupils to choose (for example) 3 properties that they think are the most important for a tent, with one property being the flexibility of the material (can it be squashed, bent, twisted or stretched).

Outside, investigate different materials to see whether one has all the chosen properties.

[NB: You could adapt this activity to make a link to the story of 'The Three Little Pigs' or plan a cross-curricular D&T project whereby pupils create miniature tents out of their chosen material.]



Material	Property 1 Flexible	Property 2 Waterproof	Property 3 Light
Fabric	✓	✗	✓
Wood			
Rubber			
Metal			
Paper			

N.C. statement: find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching (Year 2)



Seasonal Changes

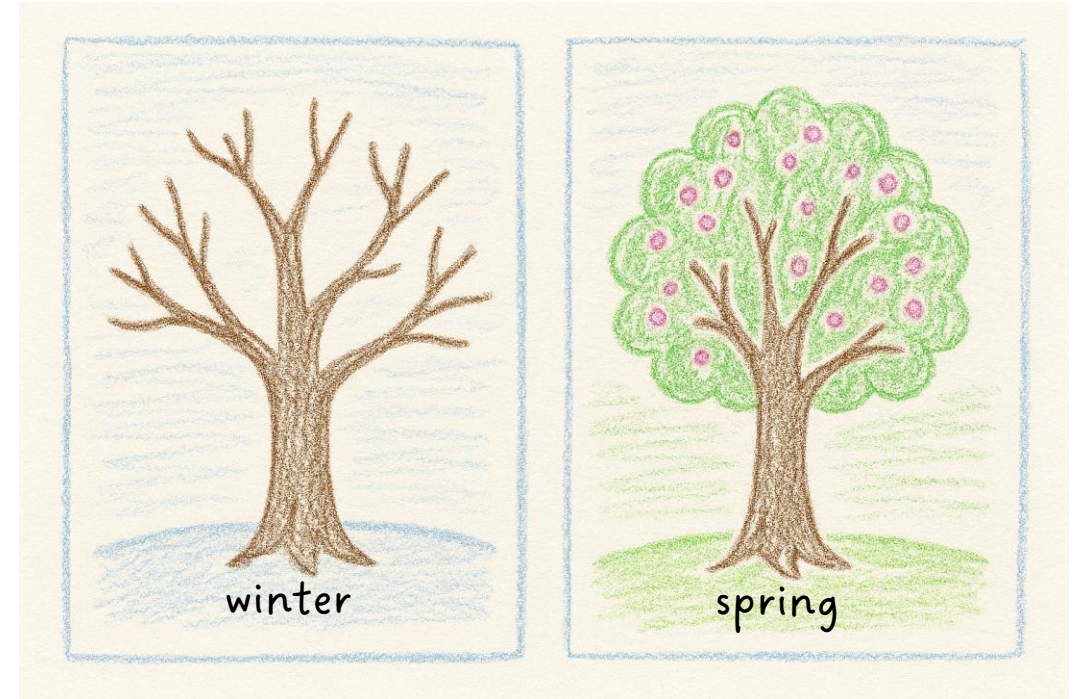
A tree in different seasons



Explore the plants and wildlife in the school grounds. How do they change over the course of a school year?

As a class, pick a chosen tree(s). Every season, return to this tree to make observations.

Get your pupils to draw (and, if able, label) the tree in its different states and explain the differences they have noticed from last time.

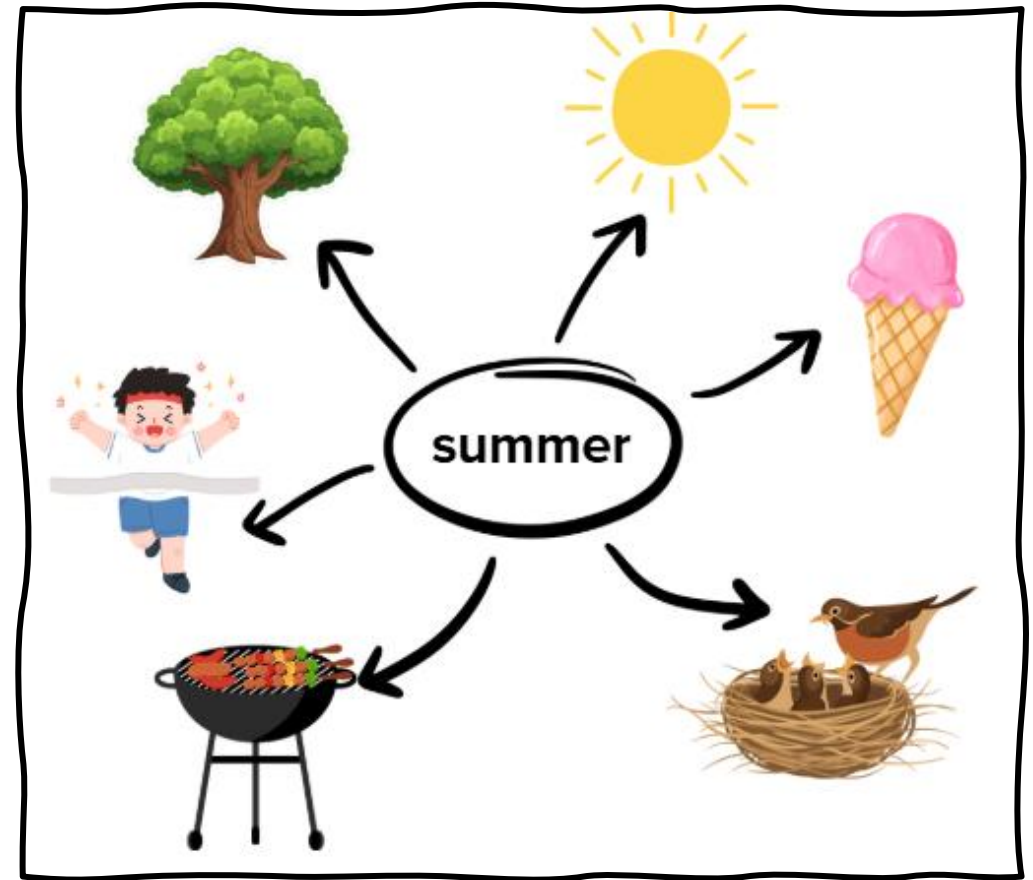


N.C. statement: observe changes across the four seasons (Year 1)

Seasonal mind maps



Spend some time outside, then ask your pupils to write the season in the middle of their page. They can then draw or write anything that they can think of that is linked to the season. This can include colours, public holidays, weather, traditions, animals, plants and anything else your pupils may come up with.



- N.C. statement:** • observe changes across the four seasons
• observe and describe weather associated with the seasons and how day length varies (Year 1)

Leaf comparisons



Ask pupils to compare the leaves they find on the ground compared to those still on branches and trees.

As a class, create a comparison list or Venn diagram of all the similarities and differences they notice.



N.C. statement: observe changes across the four seasons (Year 1)

Animals across the seasons



Investigate how animals across the school grounds adapt to the changing seasons. What creatures can we see in spring/summer compared to autumn/winter?

If your school has bird feeders, bug hotels, or other similar spaces for animals, you could track what you find at these sites across the year.



N.C. statement: observe changes across the four seasons (Year 1)

Shadow drawing



To investigate how the length of shadows change throughout the day, take pupils outside in the morning, at midday and later in the afternoon on a sunny day.

Ask each pupil to choose a spot on the playground. A partner then draws around their feet with chalk, before drawing an outline of their whole shadow.

Each time you head outside, get pupils to return to their feet outline (you could get them to add their initials to avoid confusion) and stand in the same spot. Their partner then draws around the new shadow outline.



What happens to the length of their shadow throughout the day? Can they explain why? Discuss why a task like this would be trickier to do in winter months, even if it was a bright day (the fewer sunlight hours might mean that it is too dark to trace a shadow in the early morning/late afternoon).

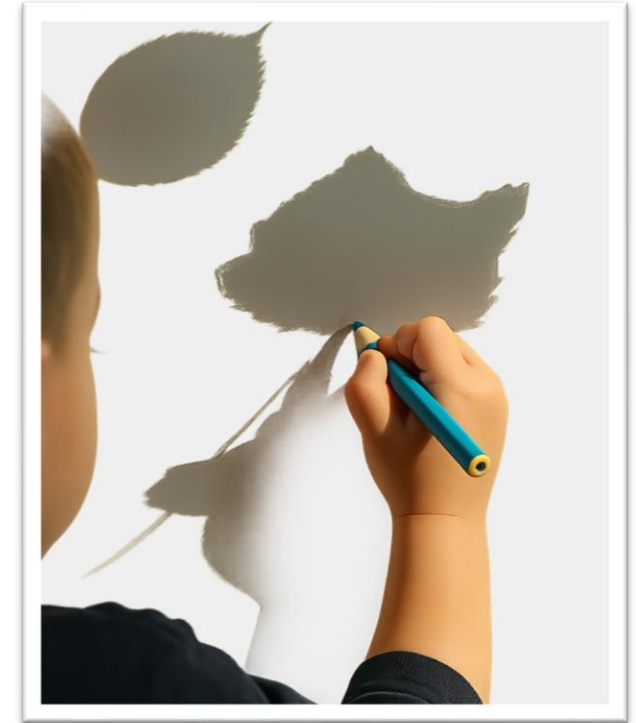
N.C. statement: observe and describe weather associated with the seasons and how day length varies (Year 1)

Shadow drawing continued



You could do a similar activity using objects from around the classroom to trace the shadows of. Pupils can then keep these as a paper record to refer to.

Using natural objects from outside could also help pupils to notice more intricate details, such as the serration around leaf edges.



N.C. statement: observe and describe weather associated with the seasons and how day length varies (Year 1)



Living Things and their Habitats

Living, dead and never alive



Which is the odd one out?



tree



wooden bench



fallen leaves

"The tree is the odd one out, because it is the only one that is still living."

N.C. statement: explore and compare the differences between things that are living, dead, and things that have never been alive (Year 2)

Animal identification



Using identification cards if needed, allow pupils to explore which creatures can be identified around the school site and any examples of habitats and/or microhabitats they can find.

You may want to collect data on the animals you find and use this to create graphs, or make tallies for different areas of your school site to then compare if the numbers and types of animals differ between locations.

N.C. statement: identify and name a variety of plants and animals in their habitats, including microhabitats (Year 2)



Links to ID sheets available on site

Choice chambers



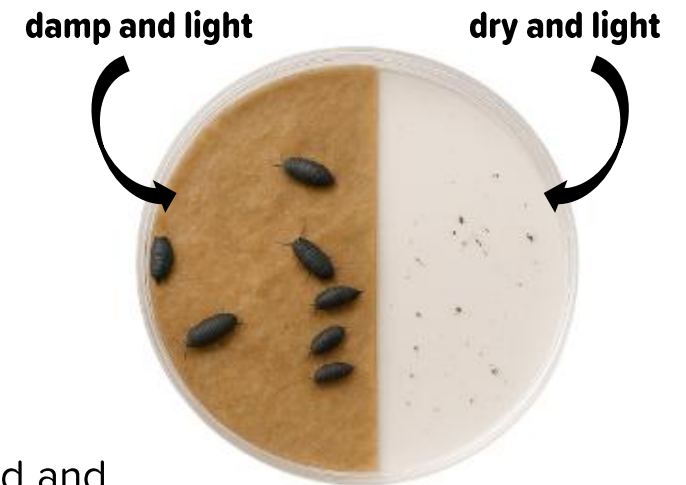
Present pupils with a pre-made choice chamber and discuss which sorts of animals would prefer each section. Encourage pupils to draw on their prior knowledge from your exploration of your outdoor area, recalling where they found certain creatures.

Collect some invertebrates from outside (e.g. woodlice, ants) and put them into the choice chambers. Use clear pots or petri-dishes to create the different criteria and see whether pupils' predictions are correct.

Remember to return the insects back to where you found them afterwards!

N.C. statement: identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other (Year 2)

dry and light	dry and dark
damp and light	damp and dark



Animal features



Examine your outdoor area. Is it a habitat? Do creatures make their homes here? Then, yes! Ask pupils why habitats don't all look the same. It is important to remember, though, that there are some key things that all habitats need to provide for the creatures that live there: food, water and shelter.

Whereabouts in your outdoor area could different animals make their homes? Challenge your pupils to design a creature that could live in your surrounding habitat, considering which features it needs to be successful across different points of the year (i.e. considering different temperatures and plant growth). They can make their creatures out of air-dry clay and use natural resources to add specialised features.

At the end of the lesson, ask pupils to share to the class or in partners how their creature is suited to the habitat. What would happen to the creature if the habitat underwent any big changes (e.g. climate change)? It is important to protect our different environments so that all animals can survive and thrive.

N.C. statement: identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other (Year 2)

A long nose to snuffle in the undergrowth and below the soil for insects to eat

Camouflaged scales to avoid detection by predators



Sharp claws to help with digging and climbing trees

A long tail to help with balance on high branches

Animal Feature Ideas					ZSL
Size	Features	Appearance	Senses	Movement	
small	feelers (antennae)	furry	eyesight	bounce	
miniscule	claws	scaly	smell	crawl	
microscopic	horns/ antlers	feathers	hearing	creep	
	wings	slimy	touch	flutter	
big	snout	spotty	taste	slither	
huge	tail	stripy		fast	
enormous	shell	camouflage		slow	

Animal Features Word Mat
available on site

Food chains



Take pupils outside so they have plenty of space to complete this activity.

Pupils work in groups of 3 or 4 to order themselves as a food chain. Provide each group with a set of pictures including a producer and two or three consumers. Each pupil takes one of the pictures, then the group organises themselves to show who eats what.



Can they then explain to the other groups how they came to their decision, using scientific language such as producer, consumer, predator and prey?

N.C. statement: describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food (Year 2)

Food chains continued



Spend time observing all the different animals that come into your outdoor area, as well as looking for evidence of any nocturnal hunters that might try to find food in your school grounds once everyone has gone home.

Are pupils able to create examples of food chains from the animals that they spot?



Rotting/decaying wood



woodlice



thrush



squirrel

N.C. statement: describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food (Year 2)