

# Science in Year 1

# Working Scientifically

**Year 1/ 2**

## **Working Scientifically Skills**

### **OBJECTIVES**

- Explore the world around them and raise their own simple questions
- Experience different types of science enquiries, including practical activities (c) Begin to recognise and make suggestions of different ways in which they might answer scientific questions
- Use their senses and simple equipment to make observations, observing changes over time.
- Carry out simple tests
- Use simple features to compare objects, materials and living things and decide how to sort and group them
- Ask people questions and use simple secondary sources to find answers
- With guidance, they should begin to notice patterns and relationships and use their observations and ideas to suggest answers to further questions
- Use simple measurements and simple equipment (e.g. hand lenses, egg timers) to gather data
- Record simple data (using charts, tables, pictures, labels and captions).
- To explain and talk about what they have found out and how they found it out.
- Beginning to answer some scientific questions with a simple reason.
- Begin to say whether things happened as they expected and if not why not.
- With help, they should record and communicate their findings in a range of ways and begin to use simple scientific vocabulary (written, diagrams, charts, pictures, tables, ICT and verbally)

### **VOCABULARY**

Questions/Answers

Test

Observe/observe over time Identify

compare

sort

group

equipment

Record

Gather Evidence

measure

patterns

Results

Pictograms

Simple chart and table describe

Similar/similarities different/differences

reason

Child friendly version to be put in the back of children's books/floor book

## What skills have we used?



### Year 1

### Area of NC: Animals, including humans (Biology)

**Learning Objectives** (in suggested order of teaching sequence)

- Identify and label parts of the human body
- Identify and name which part of the body is associated with each sense.
- Identify and name a variety of common animals (including fish, amphibians, reptiles, birds, invertebrates and mammals)
- Name some common domestic and wild animals and the differences between them
- Compare bodies of common animals (fish, amphibians, reptiles, birds and mammals, including pets).
- Identify and name a variety of animals based on what they eat (carnivores, herbivores and omnivores).
- Sort and group animals based on how they are different, (fish, amphibians, reptiles, birds and mammals, including pets).

***Pupils do not need to be taught the following content, which they will learn in later year groups: Y2 will look at what animals and humans need to survive and food chains, Y3 will identify the names of parts in the skeleton and muscular system and their functions, Y4 will look at teeth of herbivore, carnivores and omnivores, the digestive organs and more complex food chains, Y6 will look at other internal organs and the circulatory system***

**Working Scientifically Objectives that link to this topic:**

- Explore the world around them and raise their own simple questions
- Ask people questions and use simple secondary sources to find answers
- Use simple features to compare objects, materials and living things and decide how to sort and group them
- Beginning to answer some scientific questions with a simple reason.

- With help, they should record and communicate their findings in a range of ways and begin to use simple scientific vocabulary (written, diagrams, charts, pictures, tables, ICT and verbally)

**Others could be relevant dependant on which practical enquiries you choose to plan**

Learning Objective	Objective Broken Down into Differentiation		
	<i>Below</i>	<i>Expected</i>	<i>Above</i>
<b>Identify and label parts of the human body</b>	Pupil can point to different parts of the body and suggest names (not always correct)	Pupil can identify and name the main parts of the human body independently	Pupil can name main parts of the human body and explain their functions
<b>Identify and name which part of the body is associated with each sense.</b>	Pupil begins to identify that we have 5 different senses.	Pupil recognises that we have 5 different senses and explain which part of the body is associated with each	Pupil can accurately name each sense and explain why we need these senses and how they are useful to us
<b>Identify and name a variety of common animals (including fish, amphibians, reptiles, birds, invertebrates and mammals)</b>	With support, pupils can identify common animals	Pupils can identify common animals from their local environment as well as around the world independently	Pupils can identify a number of common animals from each animal group
<b>Name some common domestic and wild animals and the differences between them</b>	Pupil can name animals that are pets and some that are not pets	Pupil can identify why some animals are domestic and why some are wild, can explain the differences between them	Pupil can identify how we care for domestic animals in comparison to wild ones.
<b>Compare bodies of common animals (fish, amphibians, reptiles, birds and mammals, including pets).</b>	Pupils begin to recognise some basic differences between two animals e.g. legs and no legs	Pupil recognises the different structure of common animals and can use these to group some animals	Pupil recognises the different structure of common animals from each animal group and can compare the human body to other animal groups
<b>Identify and name a variety of animals based on what they eat (carnivores, herbivores and omnivores).</b>	Pupil knows that not all animals eat the same food and that some eat only other animals, others eat only plants and some eat a mix of both (they may not use the terms carnivore, herbivore and omnivore)	Pupil can explain the difference between carnivores, herbivores and omnivores	Pupil can explain the difference between carnivores, herbivores and omnivores and give a number of examples of animals in those groups
<b>Sort and group animals based on how they are different, (fish, amphibians, reptiles, birds and mammals, including pets).</b>	Pupil, with support, can identify differences in the animals they see around them and may loosely group them according to these feature	Pupil recognises how to sort animals based on their differences. Then can do this independently with given criteria.	Pupil recognises how to sort animals based on their similarities and differences. Then can do this

independently and create their own criteria.

**Scientific Enquiry/Activity Ideas:**

**Pattern Seeking**

- Which sense do you think is most important?
- Are the oldest children in the class the tallest?
- What do different animals have in common? (children pick animals to research and identify similarities and differences, children could also bring their own stuffed animals in and a class discussion could follow. **See the book 'A Creative Approach to Teaching Science'**)

**Observations Over Time**

- Ask children about any pets and how those pets developed and grew over time

**Identifying, classifying and grouping**

- How can we organise all the zoo animals?
- Find and name as many animals as possible, group them into herbivore or carnivore (What's for dinner **See the book 'A Creative Approach to Teaching Science'**)
- Identify which animal could have made that paw print.
- Classify animals according to how they are covered (feathers, fur, scales,
- Children sort animals in a variety of ways using, they could suggest their own criteria
- Classify animals according to whether they can fly
- Classify animals according to if they live in water
- Classify animals according to whether they can lay eggs
- Use books to name animals from around the world
- How big, how small? Which animals are taller than us? Which are smaller? **See the book 'A Creative Approach to Teaching Science'**)
- *Identify animal body parts by making jigsaws, jumbling and children putting the correct animals together. (Whose body part - **See the book 'A Creative Approach to Teaching Science'**)*
- Identify parts of the human body - draw around a child on large rolls of paper how many body parts can the children name, create a person out of magazine collage. Large scale labelling/Body Part Collage **See the book 'A Creative Approach to Teaching Science'**
- Play Simon Says during PE lessons linked to body parts
- Give children a mirror and asked to look at their faces closely. They were then asked to draw/label the body parts named in the work bank e.g. ears, nose, eyes, chin, lips, nostrils, tongue.
- Go on a senses walk around school, identify what they can hear, what they can see etc.
- What animals do we see in Spring? Identify animals in their local area and link with seasonal change topic.

**Practical Tests**

- Investigating five senses - **See the book 'A Creative Approach to Teaching Science'**)
- Senses activities on each table e.g. feely pots, smell pots, blindfold taste test, identify the sound, magnify glasses what can you spot?
- What would I be like if I couldn't see or hear?
- Is my hearing better with my eyes closed?
- What different tastes can I taste?

**Research**

- Do all animals have the same senses as humans?
- What food do certain animals prefer to eat?

Non statutory NC ideas

- *Could work scientifically by: using observations, videos, photographs to group animals based on their bodies and what they eat*
- *Could work scientifically by: using their senses to compare different textures, sounds, smells, noises and tastes linking to which body part they used*

## Scientists to Consider

Animal conservationists like: Steve Irwin, Gerald Durrell and Chris Packham

Bright Ideas Time Suggestions	Vocabulary to be Taught	Possible Trips/Experiences	Possible Cross-Curricular Links	Potential Books to use
<ul style="list-style-type: none"><li>• Odd one out – A dog, a monkey and a lion (and other animals that are domestic and wild)</li><li>• Odd one out – dog, rabbit and shark</li><li>• PMI – What if there were no carnivores in the world?</li><li>• What is the same, what is different about these animals?</li><li>• Odd one out – insect, human, fish (comparing bodies of animals)</li><li>• What is the same, what is different? Snake, human ears, elephant ears.</li><li>• Odd one out – human nose, dog nose, beak</li><li>• <a href="https://explorify.wellcome.ac.uk/en/activities/zoom-in-zoom-out/prickly-and-spiky">https://explorify.wellcome.ac.uk/en/activities/zoom-in-zoom-out/prickly-and-spiky</a></li><li>• <a href="https://explorify.wellcome.ac.uk/en/activities/odd-one-out/in-your-eyes">https://explorify.wellcome.ac.uk/en/activities/odd-one-out/in-your-eyes</a></li><li>• <a href="https://explorify.wellcome.ac.uk/en/activities/zoom-in-zoom-out/wet-and-shin">https://explorify.wellcome.ac.uk/en/activities/zoom-in-zoom-out/wet-and-shin</a></li></ul>	<p>Common Animals (<b>PLEASE MAKE NAME CARDS FOR THE SPECIFIC ANIMALS YOU DISCUSS IN LESSONS</b>)</p> <p>Pets (<b>PLEASE MAKE NAME CARDS FOR THE SPECIFIC ANIMALS YOU DISCUSS IN LESSONS</b>)</p> <p>Wild animals (<b>PLEASE MAKE NAME CARDS FOR THE SPECIFIC ANIMALS YOU DISCUSS IN LESSONS</b>)</p> <p>Animals, Wild animals, domestic animals, pets Tail, wing , legs, claws, fin , scales, feathers , fur /hair, Beak, paws, hooves, carnivore , herbivore, Omnivore</p> <p>Fingers, hands , skin, Tongue, Mouth, nose, ear, eyes, face , Legs, Feet , Human body, Head , neck , Arms, Elbow, Legs, Knees , Toes , shoulders , ankles</p>	<ul style="list-style-type: none"><li>• Animal welfare – visit from RSPCA.</li><li>• Visit from a Local Vet</li><li>• Trip to a zoo – learn about what animals eat etc.</li><li>• Washington Wildfowl and Wetlands Trust – Life Centre - Looking at predators, carnivores and Herbivores</li><li>• Life Centre - Compare Humans and Animals Workshop</li><li>• Life Centre - Senses workshop</li><li>• Bugs N Stuff - <a href="http://www.bugsnstuff.com/our-workshops/schools/">http://www.bugsnstuff.com/our-workshops/schools/</a> - rainforest and senses workshop</li></ul>	<p><b>English:</b></p> <ul style="list-style-type: none"><li>• Create a report about their own pets/favourite pet to present to other children.</li><li>• Write a non-fiction text about a favourite animal.</li><li>• Write detailed sentences to describe animals.</li><li>• Create a fact file about a group of animals – what have they all got in common?</li></ul> <p><b>Maths:</b> Sort animals into groups using Venn diagrams (physical Venn diagrams with hoops etc)</p> <p><b>ICT/iPads:</b></p> <ul style="list-style-type: none"><li>• <i>Pic Collage to sort pictures and label</i></li><li>• <i>Post it app for groupings</i></li><li>• <i>iMovie or Book Creator for domestic animals, Padlet can be used to generate the questions the children want to investigate in each topic.</i></li></ul> <p><i>Kahoot can be used as an assessment tool in lessons or at the end of each</i></p>	<ul style="list-style-type: none"><li>• RSPB My First Book of Garden Birds and RSPB My First Book of Garden Wildlife - <i>To be able to identify and name common animals</i></li><li>• Me and my amazing body by Joan Sweeney - <i>To be able to identify and label parts of the human body</i></li><li>• Creature Features by Natasha Durley - <i>To be able to compare bodies of common animals (fish, amphibians, reptiles, birds and mammals, including pets).</i></li></ul>

<b>Year 1</b>	<b>Area of NC: Plants (Biology)</b>		
<b>Learning Objectives</b> <i>(in suggested order of teaching sequence)</i>	<ul style="list-style-type: none"> <li>Identify and describe the basic parts of a flowering plant</li> <li>Identify and name a variety of common wild and garden plants</li> <li>Identify and name the basic structure of trees</li> <li>Identify and sort deciduous and evergreen trees</li> </ul> <p><b><i>Pupils do not need to be taught the following content, which they will learn in later year groups:</i></b></p> <p><b><i>In Y2 they will look at how seeds and bulbs grow into mature plants and they will learn what plants needs to survive. In Y3 they will learn the functions of different parts of a flower and about plant lifecycles as well as classifying different types of plants in Y4 and Y6.</i></b></p>		
<b>Working Scientifically Objectives that link to this topic:</b>	<ul style="list-style-type: none"> <li>Explore the world around them and raise their own simple questions</li> <li>Use their senses and simple equipment to make observations, observing changes over time.</li> <li>Use simple features to compare objects, materials and living things and decide how to sort and group them</li> <li>Ask people questions and use simple secondary sources to find answers</li> <li>To explain and talk about what they have found out and how they found it out.</li> <li>With help, they should record and communicate their findings in a range of ways and begin to use simple scientific vocabulary (written, diagrams, charts, pictures, tables, ICT and verbally)</li> </ul> <p><b><i>Others could be relevant dependant on which practical enquiries you choose to plan</i></b></p>		
<b>Learning Objective</b>	<b>Objective Broken Down into Differentiation</b>		
	<b><i>Below</i></b>	<b><i>Expected</i></b>	<b><i>Above</i></b>
<b>Identify and describe the basic parts of a flowering plant</b> <b>Forest school</b>	Pupil can use some vocabulary accurately to name parts of a plant (may not be consistent across a range of plants)	Pupil can accurately and consistently name the main parts of a plant over a range of plants	Pupil can identify similarities and differences in the structure of plants e.g. not all stems are green
<b>Identify and name a variety of common wild and garden plants</b> <b>Forest school</b>	Pupil can identify and name a limited number of plants usually requiring support	Pupil can identify and name accurately a range of plants (particularly those they see regularly)	Pupil begins to notice similarities and differences between the plants they identify, they could suggest ways to sort them
<b>Identify and name the basic structure of trees</b> <b>Forest school</b>	Pupil can use some vocabulary accurately to name parts of a tree, with support	Pupil can accurately and consistently name the main parts of a tree, using the correct vocabulary	Pupil can describe what the different parts of a tree are using scientific vocabulary
<b>Identify and sort deciduous and evergreen trees</b> <b>Forest school</b>	Pupil can recognise that some trees do/do not have leaves in winter	Pupil can name trees they see regularly	Pupil can give some reason as to how to identify between deciduous and evergreen trees

Pupil can identify which trees lose their leaves and which keep them for the whole year and use the correct vocabulary of deciduous and evergreen

**Scientific Enquiry/Activity Ideas:  
Ensure experiments/enquires are significantly different to Year 2 and Year 3**

**Pattern Seeking**

- Are all leaves the same?
- Can you estimate the length of the roots on different trees? Use string and rope to predict length **(See the book 'A Creative Approach to Teaching Science')**

**Observations Over Time**

- Do plants grow in winter?
- How do plants change over the seasons?
- Adopt a tree, how does it change throughout the seasons
- Do trees with bigger leaves lose their leaves first in autumn?

**Identifying, classifying and grouping**

- **Make friends with a tree** (in practical work in primary science on server) They explore the tree by feeling the texture and shape of the trunk and hugging it to feel its size. If there are leaves, blossom or fruits within easy reach these can also be explored. Encourage children to describe what they can feel. Children may also notice if any part of the tree has a distinctive smell and can consider the sound made by the wind or their hands moving the leaves. Other children can be helped to prompt them with questions about what they can feel, hear and smell. Children collect leaves, seeds etc. preferably from the ground around their tree or, if picking them, carefully and in small quantities so as not to damage their 'friend'. They can also take photographs and bark rubbings. These can be used for further describing, sorting, grouping and discussion activities to extend vocabulary and observation skills.
- How can we sort the leaves that we collect on our walk? Go to an area with trees and identify them by looking at their leaves and using a tree/ leaf spotter sheet. Create leaf characters and use the book Leaf Man by Lois Ehlert **(See the book 'A Creative Approach to Teaching Science')**
- Can you get a real plant from the playground, separate it, look at it under magnifying glasses and hand lens and label it into its different parts? **(See the book 'A Creative Approach to Teaching Science' - functions of each part not required until y3.**
- Take photographs of plants outside identify their names and create a class book **(See the book 'A Creative Approach to Teaching Science')**
- Bring in real and artificial flowers that the children name and identify - children can role-play as florists **(See the book 'A Creative Approach to Teaching Science')**
- Do we ever eat flowers? Which part can we eat? Look at vegetables and fruit e.g. sellers we eat the stem; peas we eat the seeds **(See the book 'A Creative Approach to Teaching Science')**
- Create observational drawings of plants in the playground/local area.
- *Pupils create lists of common flowers/plants seen in/around the local area with photographs of the plants at different times of the year/stages*

**Practical Tests**

- Who can make the longest daisy chain?
- Can you make perfume from what you find outside?
- Look at plant myths - can we tell the time by blowing the seeds from a dandelion head? Are snowdrops really made from snow? Can you tell if someone likes butter by holding a buttercup under their chin?

**Research**

- What are the most common British plants and where can we find them?
- Why do we wear poppies on remembrance day?
- Are vegetables and fruit plants? Visit an allotment **(See the book 'A Creative Approach to Teaching Science')**
- Articulate through art - Create models, collages of common flowering plants and trees, make 3d models from cake cases, leaves etc. **(See the book 'A Creative Approach to Teaching Science')**
- What is the biggest/smallest/smelliest (etc) tree/flower/plant on the planet?
- How did Beatrix Potter help our understanding of mushrooms and toadstools?
- What is a botanist?

**Non statutory NC ideas**

- *Could work scientifically by:* using magnify glasses to observe plants and trees describing how they would group them and drawing diagrams of the different parts
- *Could work scientifically by:* Observe plants across the seasons describing and comparing what differences and similarities they have seen.



<b>Scientists to Consider</b>				
<ul style="list-style-type: none"> <li>• Beatrix Potter</li> </ul>				
<b>Bright Ideas Time Suggestions</b>	<b>Vocabulary to be Taught</b>	<b>Possible Trips/Experiences</b>	<b>Possible Cross-Curricular Links</b>	<b>Potential Books to use</b>
<ul style="list-style-type: none"> <li>• Odd one out - Tree, grass and a daffodil</li> <li>• Odd one out – root, stem, flower petals</li> <li>• Are all plants green?</li> <li>• Are trees plants?</li> <li>• Is grass a plant?</li> <li>• Similarities and differences – deciduous v evergreen tree, common v wild plants</li> </ul>	<p>Deciduous trees, Evergreen trees, flowering plants, trees , wild plants,</p> <p>garden plants , Vegetables , leaf/leaves , Flowers/ blossom, petals, fruit trunk , branches , Stem , Roots , buds , bark, earth, soil , living, growing</p> <p>Names of trees and plants in the local area</p>	<ul style="list-style-type: none"> <li>• Ouseburn Parks Education Programme Jesmond Dene - <a href="https://www.newcastle.gov.uk/sites/default/files/wwwfileroot/leisure-libraries-and-tourism/parks-and-countryside/education_workshops_spring_2015_.pdf">https://www.newcastle.gov.uk/sites/default/files/wwwfileroot/leisure-libraries-and-tourism/parks-and-countryside/education_workshops_spring_2015_.pdf</a> - Growing Plants workshop</li> <li>• Life Centre - <a href="https://education.life.org.uk/workshop/plants">https://education.life.org.uk/workshop/plants</a></li> <li>• Sunderland Winter Gardens - Growing Plants - <a href="https://www.seeitdoitsunderland.co.uk/learning-sessions/295/natural-world">https://www.seeitdoitsunderland.co.uk/learning-sessions/295/natural-world</a></li> <li>• Go to local parks and around school environment what plants are in our local environment.</li> <li>• Visit an allotment, what things can we grow in our local area.</li> </ul>	<p><b>English:</b></p> <ul style="list-style-type: none"> <li>• Describe plants that they have seen outside, draw them and describe them.</li> </ul> <p><b>Maths:</b></p> <p><b>ICT/iPads:</b></p> <ul style="list-style-type: none"> <li>• Pic Collage to identify parts of a plant, or to group deciduous and evergreen trees</li> <li>• AR Sheets of creating labels for plants</li> <li>• Annotating on Seesaw</li> <li>• Padlet can be used to generate the questions the children want to investigate in each topic.</li> <li>• Kahoot quizzes</li> </ul>	<ul style="list-style-type: none"> <li>• A Little Guide to Wild Flowers by Charlotte Voake — <i>To be able to identify and name a variety of common wild and garden plants</i></li> <li>• A Little Guide to Trees by Charlotte Voake - <i>To be able to identify and name a variety of common wild and garden plants</i></li> </ul>

<b>Year 1</b>	<b>Area of NC: Seasonal Change (Biology/Physics)</b>
<b>Learning Objectives</b>	<ul style="list-style-type: none"> <li>• Name the four seasons</li> <li>• Observe and describe changes across the four seasons</li> <li>• Observe and describe weather associated with the seasons</li> <li>• Observe and describe how day length varies across the seasons</li> </ul> <p><b><i>Pupils do not need to be taught the following content, which they will learn in later year groups: In Y3 children will be taught about sun safety, in Y5 children will learn about day and night length being a result of the Earth's rotation</i></b></p>
<b>Working Scientifically Objectives that link to this topic:</b>	<p>(a) Explore the world around them and raise their own simple questions</p> <p>(b) Experience different types of science enquiries, including practical activities</p> <p>(d) Use their senses and simple equipment to make observations, observing changes over time.</p> <p>(h) With guidance, they should begin to notice patterns and relationships and use their observations and ideas to suggest answers to further questions</p> <p>(i) Use simple measurements and simple equipment</p> <p>(j) Record simple data (using charts, tables, pictures, labels and captions).</p> <p>(k) To explain and talk about what they have found out and how they found it out.</p> <p>(m) Begin to say whether things happened as they expected and if not why not.</p> <p>(n) With help, they should record and communicate their findings in a range of ways and begin to use simple scientific vocabulary</p>

	<b>Others could be relevant dependant on which practical enquiries you choose to plan</b>		
<b>Learning Objective</b>	<b>Objective Broken Down into Differentiation</b>		
	<b><i>Below</i></b>	<b><i>Expected</i></b>	<b><i>Above</i></b>
<b>To be able to name the four seasons</b>	Pupil knows that there are four different seasons	Pupil knows the names of the seasons and the months they occur	Pupil knows the names of the seasons and the months they occur understanding it is cyclical (rather than Winter is first in January etc)
<b>To be able to observe and describe changes across the four seasons</b> <b>Forest school</b>	Pupil can make some simple observations and comparisons between all the seasons	Pupil can identify features of each season and compares and contrasts seasonal change using their observations from the local area. They use accurate vocabulary.	When pupil describes differences and similarities across the seasons they make reference to the effect of the seasons on plants, animals and humans  Some children may even recognise that seasons around the world contrast to ours in the UK
<b>To be able to observe and describe weather associated with the seasons</b> <b>Forest school</b>	Pupil knows that it is warmer in spring and summer and colder in winter and autumn	Pupil records simple weather information on a chart or in a diary and explains the changes they observe over the seasons	Pupil uses information about the seasons and daily weather patterns to predict changes/expected conditions
<b>To be able to observe and describes how day length varies across the seasons</b>	Pupil can identify that at some points of the year it becomes darker at an earlier time	Pupil understands that there is more daylight in summer and less in winter	Pupil can independently describe day length in each season
<b>Scientific Enquiry/Activity Ideas:</b>			
<b>Pattern Seeking</b> <ul style="list-style-type: none"> <li>Do trees with bigger leaves lose their leaves first in autumn?</li> <li>Do pinecones help us predict the weather? (See the book 'A Creative Approach to Teaching Science' pg 61)</li> </ul>	<b>Observations Over Time</b> <ul style="list-style-type: none"> <li>Set up a weather station in class and weather watching stations around the school to record how different areas of the school grounds/local area look in different seasons.</li> <li>How does the oak tree change over the year? Take a photo of a tree every day for the year and discuss look at That tree by Mark Hirsch.</li> <li>How does our local environment change over the seasons? Photography project over the year.</li> <li>Observation over time - Keep a class diary of what the weather is like throughout the</li> </ul>	<b>Identifying, classifying and grouping</b> <ul style="list-style-type: none"> <li>How would you group these things based on which season you are most likely to see them in?</li> <li>Can you create a journey stick with things from nature to show each season? See the book 'A Creative Approach to Teaching Science' pg 64)</li> <li>Write a letter to Olaf to explain what other seasons are like so he</li> </ul>	<b>Practical Tests</b> <ul style="list-style-type: none"> <li>How big is a rain drop? (See resource card)</li> <li>How does the colour of a UV bead change over the day?</li> <li>Why do leaves change colour? See the book 'A Creative Approach to Teaching Science' pg 60)</li> <li>Evergreen and Deciduous investigation See the book 'A Creative Approach to Teaching Science' pg 61-62)</li> </ul>
			<b>Research</b> <ul style="list-style-type: none"> <li>How do the seasons affect British plants?</li> <li>How do the seasons affect British animals ?</li> <li>Are there plants that are in flower in every season? What are they?</li> <li>Does it snow in summer?</li> <li>What is a meteorologist?</li> </ul>

	<p>year. Include photographs - what we are wearing, what the trees look like, etc. go on nature walks and collect natural things for the diary.</p> <ul style="list-style-type: none"> <li>• How do leaves change?</li> <li>• Can we measure temperature and measure rainfall throughout the year? Do this over time for different seasons and children could begin to predict from previous observations.</li> <li>• In which season does it rain the most?</li> <li>• Children keep a record of what time it is when it becomes dark outside – over the year they discuss changes</li> </ul>	<p>can learn about those that are not Winter.</p>		
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**Non statutory NC ideas**

- *Could work scientifically by: making tables and charts about changes and differences in weather and day length as the seasons change*

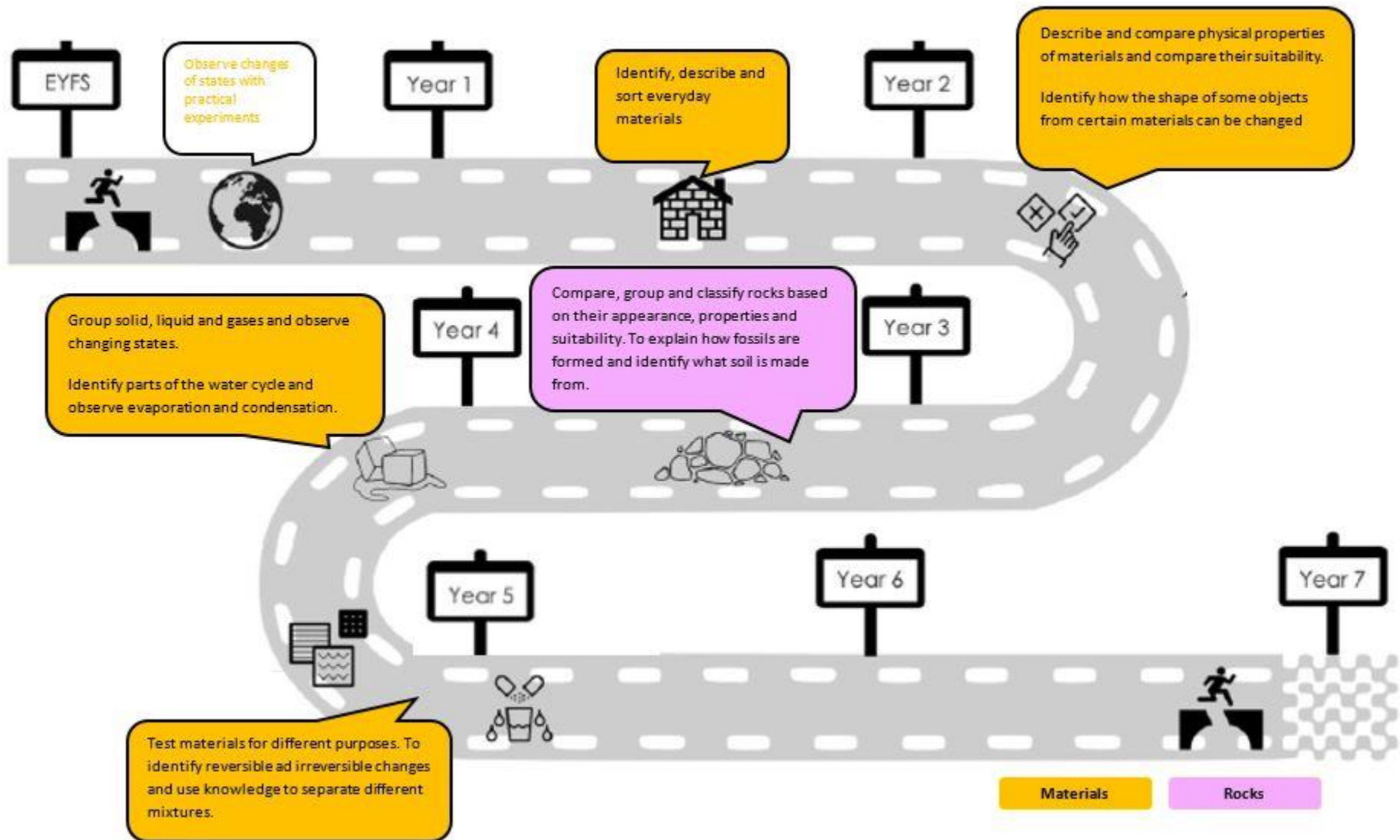
**Scientists to Consider**

- Could look at broadcast meteorologists who do weather reports on the news, children can then become meteorologists and do weather reports

<b>Bright Ideas Time Suggestions</b>	<b>Vocabulary to be Taught</b>	<b>Possible Trips/Experiences</b>	<b>Possible Cross-Curricular Links</b>	<b>Potential Books to use</b>
<ul style="list-style-type: none"> <li>• PMI – What if we only had Summer and there was never a winter?</li> <li>• Odd one out – picture of a tree in the four seasons.</li> <li>• What if it always got dark at the same time?</li> <li>• Pictures of winter and pictures of autumn – what is similar, what is different?</li> <li>• Pictures of spring and pictures of summer– what is similar, what is different?</li> <li>• Odd one out- coat, wellies, deciduous tree , pumpkin</li> </ul>	<p>Season Spring, summer, autumn, winter</p> <p>deciduous and evergreen trees.</p> <p>Weather: hot/warm, cool/cold, sun/sunny, cloudy, wind, rain, snow, hail, sleet, frost, fog/mist, icy/ice, rainbow, thunder, lightning, storm, blizzard, freezing, temperature, hot, cold, cool, forecast,</p> <p>light, dark, day, night, daytime, sunrise, sunset, daylength.</p>	<ul style="list-style-type: none"> <li>• Trips to local parks to do seasonal walks (adopt a tree and go back to visit each season)</li> <li>• Ouseburn Parks Education Programme Jesmond Dene - <a href="https://www.newcastle.gov.uk/sites/default/files/wwwfileroot/leisure-libraries-and-tourism/parks-and-countryside/education_workshop_s_spring_2015_.pdf">https://www.newcastle.gov.uk/sites/default/files/wwwfileroot/leisure-libraries-and-tourism/parks-and-countryside/education_workshop_s_spring_2015_.pdf</a> - Seasons Workshop</li> <li>• Mobile Planetarium into school - <a href="http://immersive-experiences.co.uk/education/planetariums">http://immersive-experiences.co.uk/education/planetariums</a> - Night Sky component: KS1 (Seasonal changes)</li> <li>• Life Centre - <a href="https://education.life.org.uk/workshop/seasons-and-weather">https://education.life.org.uk/workshop/seasons-and-weather</a> - short planetarium and lab session</li> <li>• <i>Gibside</i> - <a href="https://nt.global.ssl.fastly.net/gibside/documents/gibside-information-packs-for-primary-schools.pdf">https://nt.global.ssl.fastly.net/gibside/documents/gibside-information-packs-for-primary-schools.pdf</a> - <i>Seasonal Activities</i></li> </ul>	<p><b>English:</b></p> <ul style="list-style-type: none"> <li>• Descriptive writing about the seasons.</li> <li>• Acrostic Poems about each season</li> <li>• Letter writing telling Olaf about seasons other than Winter.</li> </ul> <p><b>Maths:</b></p> <ul style="list-style-type: none"> <li>• Pictograms and tables of the weather</li> <li>• Venn diagrams to sort things they would see in certain seasons</li> </ul> <p><b>ICT/iPads:</b></p> <ul style="list-style-type: none"> <li>• Padlet- to generate the questions the children want to investigate in each topic.</li> <li>• Kahoot quizzes</li> <li>• Book creator about each season describing what happens in each - also to order the seasons correctly / could also be done on iMovie</li> <li>• Shadow Puppet app to record an explanation over an image</li> <li>• YouTube time lapse videos of the seasons</li> <li>• Green screen children in front of a season describing its features or doing a weather report</li> </ul>	<ul style="list-style-type: none"> <li>• Tree: Seasons come, seasons go by Patricia Heggarty and Britta Tekentrup - <i>To be able to observe and describe changes across the four seasons</i></li> <li>• A Stroll through the Seasons by Kay Barnham - <i>To be able to observe and describe changes across the four seasons</i></li> <li>• The weather girls by AKI Delphine Mach - <i>To be able to observe and describe changes across the four seasons</i></li> <li>• Lift the flap seasons and weather by Holly Bathie - <i>To be able to observe and describe weather associated with the seasons</i></li> <li>• Autumn is here by Heidi Pross Gary — <i>To be able to observe and describe changes across the four seasons</i></li> <li>• The Things That I LOVE about TREES: by Chris Butterworth - <i>To be able to observe and describe changes across the four seasons</i></li> </ul>

			<ul style="list-style-type: none"><li>• Check daily weather on the internet.</li></ul>	<ul style="list-style-type: none"><li>• Seasons (Poems About) by Brian Moses - To be able to observe and describe changes across the four seasons</li></ul>
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# Chemistry



<b>Year 1</b>	<b>Area of NC: Everyday Materials (Chemistry)</b>		
<b>Learning Objectives</b> <i>(in suggested order of teaching sequence)</i>	<ul style="list-style-type: none"> <li>Name and identify a variety of everyday materials (including wood, plastic, glass, metal, water, rubber and rock)</li> <li>Identify an object from the material it is made.</li> <li>Describe a variety of everyday materials</li> <li>Compare and group together a variety of everyday materials based on their simple properties</li> </ul> <p><b><i>Pupils do not need to be taught the following content, which they will learn in later year groups:</i></b> In Y2 children identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses and find out how shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. Further reversible and irreversible changes of materials will be looked at in Y4 and Y5.</p>		
<b>Working Scientifically Objectives that link to this topic:</b>	<ul style="list-style-type: none"> <li>Use simple features to compare objects, materials and living things and decide how to sort and group them</li> <li>Record simple data (using charts, tables, pictures, labels and captions).</li> <li>Beginning to answer some scientific questions with a simple reason.</li> <li>With help, they should record and communicate their findings in a range of ways and begin to use simple scientific vocabulary (written, diagrams, charts, pictures, tables, ICT and verbally)</li> </ul> <p><b><i>Others could be relevant dependant on which practical enquiries you choose to plan</i></b></p>		
<b>Learning Objective</b>	<b>Objective Broken Down into Differentiation</b>		
	<b><i>Below</i></b>	<b><i>Expected</i></b>	<b><i>Above</i></b>
<b>Name and identify a variety of everyday materials (including wood, plastic, glass, metal, water, rubber and rock)</b>	Pupils, with support, can identify common everyday materials.	Pupils can independently identify and name a wider range of materials	Pupils can identify a range of material accurately and can identify those that are natural and man-made materials.
<b>Identify an object from the material it is made.</b>	Pupils, with support, can identify the object from the material in which it is made	Pupils can independently and correctly label a picture or diagram of an object identifying the material it is made from	Pupils can accurately distinguish between the object and multiple materials upon which an object is made.
<b>Describe a variety of everyday materials</b>	Pupil uses limited vocabulary to express the properties of materials	Pupil can use a range of vocabulary and their senses to describe the properties of materials	Pupil has a wide-ranging vocabulary to accurately describe the properties of a range of materials
<b>Compare and group together a variety of everyday materials based on their simple properties</b>	Pupils can sort materials using a range of properties given to them	Pupils compares and groups together a variety of everyday materials based on given criteria, explaining how the two materials are similar or different	Pupils can compare and group materials based on criteria that they come up with  Pupils can choose an appropriate method for testing an object for a particular property
<b>Scientific Enquiry/Activity Ideas:</b> <b><i>Ensure experiments/enquires are significantly different to Year 2</i></b>			

<p><b><u>Pattern Seeking</u></b></p> <ul style="list-style-type: none"> <li>• Is there a pattern in the types of materials that are used to make objects in a school?</li> <li>• To compare shiny/dull materials with smooth/rough materials.</li> <li>•</li> </ul>	<p><b><u>Observations Over Time</u></b></p>	<p><b><u>Identifying, classifying and grouping</u></b></p> <ul style="list-style-type: none"> <li>• What are the things I use made from?</li> <li>• Labelling materials used in sports equipment and suggesting why they are used</li> <li>• children design their own house for one of the three little pigs and label the materials they would use.</li> <li>• Give a range of the same object made from a different material and children distinguish between the material and the object. E.g. a range of cups or spoons made from different materials</li> <li>• Give objects made from more than material and children identify all the different materials on one object.</li> <li>• The class teacher (and then the children) pretended to be a material and the children had to ask questions about its properties in order to identify and name the material.</li> <li>• Classify the materials into different groups plastic, metal etc. - You could sort toys in Santa's sack into different materials <b>See the book 'A Creative Approach to Teaching Science' pg 75/76</b></li> <li>• Can you identify the objects and the materials in the classroom? Go on a materials hunt - <b>See the book 'A Creative Approach to Teaching Science' pg 76</b></li> <li>• Can you identify the item in the box by asking questions on its materials?</li> <li>• Sort materials collected on a hunt around school <b>See the book 'A Creative Approach to Teaching Science' pg 77</b></li> </ul>	<p><b><u>Practical Tests</u></b></p> <ul style="list-style-type: none"> <li>• Which materials are the most stretchy? <b>See the book 'A Creative Approach to Teaching Science' pg 79</b></li> <li>• Could we make bridges out of chocolate?</li> <li>• Which materials can float?</li> </ul>	<p><b><u>Research</u></b></p> <ul style="list-style-type: none"> <li>• Which materials can be recycled?</li> </ul>
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**Non statutory NC ideas**

- *Could work scientifically by: Performing simple tests to explore questions about What material is best for... e.g., bookshelf, lining a dog basket etc.*

**Scientists to Consider**

<b>Bright Ideas Time Suggestions</b>	<b>Vocabulary to be Taught</b>	<b>Possible Trips/Experiences</b>	<b>Possible Cross-Curricular Links</b>	<b>Potential Books to use</b>
<ul style="list-style-type: none"> <li>• What if a pencil was made from jelly?</li> <li>• Which house would survive a storm? – brick, straw or sticks?</li> <li>• Odd one out - Plastic spoon, ball of wool and a wooden block</li> <li>• Glass cup, Glass window, glass slipper from Cinderella – odd one out</li> <li>• Odd one out – rough and smooth materials</li> <li>• Odd one out – see through and non-see through materials</li> </ul>	<p>Material (wood, plastic, glass, metal, water, rock, paper, fabrics, elastic, foil,, wool, rubber, brick)            Man-made, natural object            Properties (hard, soft, stretchy, stiff, shiny, dull, rough, smooth, bendy, not bendy, waterproof, not waterproof, breakable, see through, not see through, Strong, weak, absorbent, not absorbent, breaks/tears,) compare , group, sort</p>	<ul style="list-style-type: none"> <li>• <i>Greenshift Education</i> - <a href="http://greenshifteducation.co.uk/workshops/">http://greenshifteducation.co.uk/workshops/</a></li> <li>• <i>Life Centre</i> - <a href="https://education.life.org.uk/workshop/materials-investigation-ks1">https://education.life.org.uk/workshop/materials-investigation-ks1</a></li> </ul>	<p><b>English:</b>  <b>Maths:</b></p> <ul style="list-style-type: none"> <li>• Sorting materials into groups, using hoops to lead to Venn diagrams</li> </ul> <p><b>ICT/iPads:</b></p> <ul style="list-style-type: none"> <li>• Padlet can be used to generate the questions the children want to investigate in each topic.</li> <li>• Kahoot can be used as an assessment tool in lessons or at the end of each unit.</li> <li>• Post it app/pic collage sorting and grouping - using microphone or</li> </ul>	

			<p>explain everything as to why they have grouped them in that way using their senses and scientific vocabulary.</p> <ul style="list-style-type: none"> <li>Shadow Puppet app to record over an image an explanation</li> </ul>	
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## Other Useful Websites / Resources

### For Bright Ideas Time

- <https://explorify.wellcome.ac.uk>
- Curriculum Coverage Document with Bright Ideas examples on
- Concept Cartoons on the School Server

### For Class Resources and Planning

- <https://www.ogdentrust.com/resources-cpd/resources>
- <https://explorify.wellcome.ac.uk>
- <https://pstt.org.uk/resources>
- <https://www.primarysciencebee.com> – **example medium term plans**
- <https://ypte.org.uk/audiences/teachers>
- <https://www.stem.org.uk> (excellent resources for all topics and areas of science curriculum)
- <http://www.ciec.org.uk/interactive-planning-tool.html> (**good interactive planning tool**)
- <https://www.bbc.com/teach/terrific-scientific>
- <https://www.bbc.com/teach/ks1-science/zhsr2sg> (KS1)
- <https://www.bbc.com/teach/ks2-science/zf3kt39> (KS2)
- <http://www.ciec.org.uk/primary.html#resources>
- <https://wowscience.co.uk>
- <https://sites.google.com/view/primary-science-bee/home> - **Examples of medium term planning that could support planning**
- <http://www.rsc.org/learn-chemistry/resource/listing?searchtext=&filter=all&fLevel=LEV0000001&eMediaType=MED0000009&reference=primaryresource> - Good cross-curricular links to science and topic
- <https://endeavour.kew.org/app/os> - good real life contexts and challenges surrounding plants
- <https://nustem.uk/primarycareers/#tab-id-10> - **gives children a context for learning science by showing jobs related to the topic being taught.**
- <https://www.linnean.org/learning/teaching/primary/discovery-kits> - email for free resources to use of plants, life cycles, habitats, classification and evolution.
- <https://www.bbc.com/teach/terrific-scientific/amazing-people/zh4hbk> - information on some influential scientists
- [https://www.youtube.com/watch?v=gEGYU-0AtaM&list=PLg7f-TkW11iU11yatK\\_TcbA2tGH\\_WLe8d](https://www.youtube.com/watch?v=gEGYU-0AtaM&list=PLg7f-TkW11iU11yatK_TcbA2tGH_WLe8d) - Brian Cox School Experiments videos - a range of ideas for experiments in schools.
- <https://nustem.uk/loans-boxes/> - free loan boxes of resources to have for 6 weeks
- A creative Approach to Teaching Science book - copy given to all teachers
- Concept Cartoons on the School Server
- Curriculum coverage document on the server
- Science cupboard resource list on the server
- Resources in subject > science > then individual year group folders - these have ideas for experiments or other useful resources when planning.

### Science in the News

- <https://www.reachoutreporter.com>
- <https://www.bbc.co.uk/newsround>



- [https://www.bbc.co.uk/news/science\\_and\\_environment](https://www.bbc.co.uk/news/science_and_environment)

#### **For CPD**

- <https://www.reachoutcpd.com>
- <https://www.pstt.org.uk/resources/cpd-units>
- <http://primaryscienceonline.org.uk/glossary-of-terms/>
- Science Glossary on the server