

Whole school overview for Science Cycle 1

Scientific concept areas taught within the concept **justification for the position in the curriculum** **scientific enquiry within the topic** **questions to answer/investigate** **TAPS assessment activity to assess skills** **Tiered vocabulary (on separate documents)**

Autumn			
Cycle 1	EYFS	Science KS1	Science KS2
	Intent	Intent	Intent
	<p>Autumn 1: Food and drink - On the farm/ harvest Harvest- relevant time and seasons What is science and what is a scientist/ What do we do in science. Making recipes- how food changes (bread/jelly) <i>Observing over time</i> I wonder what will happen if you heat it up or cool your food (mix these together/cook)- predict/ observing Growing- veg cut offs- regrown- (soup first) <i>Observing over time</i> I wonder if you can grow vegetables from our scraps- predictions/ observe Sugar in drinks- healthy and unhealthy- prediction impact on teeth <i>Observing over time</i> I wonder what would happen to your teeth if you only had sugary drinks? Bouncy egg shell- egg in liquid- prediction- TAPS PREDICTION- Observe over time</p> <p>Autumn 2: Forest and woodland (books) Time Christmas fitting in with other topics within EYFS curriculum <i>Comparative and fair testing</i> Autumn objects- I wonder if nature objects float or sink? Predict and observe. Seasonal change and hibernation (bear/squirrels)- weather-light Season wheels <i>Research from secondary sources.</i> Why do animals hibernate? Celebrations and festivals New scientist Birthdays- <i>Comparative and fair testing.</i> What is the best material for wrapping paper?</p>	<p>Seasonal changes across the 4 seasons Autumn 1- Naming the 4 seasons and identifying the changes across the seasons for plants and the weather. Seasonal changes- relevant to Autumn <i>Observation over time-</i> What happens to the leave on a tree at different times of year? Monitor over time How does the weather change from season to season? Where do leaves go in the winter? <i>Pattern seeking- signs of Autumn</i> TAPS- Seasonal changes yr1 Working Scientifically Do: Observe closely, using simple equipment</p> <p>Autumn 2- Observing and describing weather and day length How animals adapt to changes in weather and seasons Seasonal changes- relevant to Autumn <i>Observe over time</i> Measure the rainfall in a particular season <i>Pattern seeking</i> Notice the pattern between rainfall, wind direction and temperature. Second TAPS activity to be confirmed</p>	<p>Solids/Liquids/ Gases Autumn - Changing state. Compare and group materials. evaporation Links to text volcanoes- liquid/gas from an eruption <i>Identifying, classifying and grouping</i> Investigate the differences between solids and liquids by examining and comparing the properties of sand and water. <i>Comparative and fair testing</i> How does temperature affect how fast evaporation takes place? <i>Observing over time</i> Observe and record evaporation from a puddle. TAPS Drying materials Yr 4 Evaporation Working Scientifically Plan: Set up a fair test (potentially move to Autumn 2 and switch)</p> <p>Autumn 2- Heating and Cooling States of matter observe that some materials change state when they are heated or cooled- <i>Observation over time</i> How does water change when it is heated and cooled? How does heating and cooling change a materials state? <i>Research using secondary sources</i> At what temperature do particular materials change state, for example when iron melts or when oxygen condenses into a liquid. As above TAPS Measuring temperature yr4 Working Scientifically</p>

	<p>properties of materials Senses and exploring materials Christmas- standalone- Dissolving candy cane experiment- observation/ prediction (different liquids and temperatures) recorded time lapse Comparative and fair testing. I wonder if the candy cane melts quicker in cold liquids or hot liquids? Sorting- magnets Pattern seeking How many different ways can you sort the items in the tuff tray. (60 seconds)? Adapted with a magnet- why.problem solving Identifying, grouping and classifying- problem solving I wonder what the best way to sort the materials is? What is the best biscuit for Santa TAPS</p>		<p>Do: Take accurate measurements using standard units, using a range of equipment including thermometers and data loggers</p>
--	---	--	---

Spring

Cycle 1	EYFS Intent	Science KS1 Intent	Science KS2 Intent
	<p>Spring 1 Weather and seasons/ superheroes Weather The children face lot of weathers in the winter. Extreme weather- tornado in a bottle- feelings Rain gauge to measure over half term- over time Snow Observing over time. I wonder how you can stop the snow from melting? Snow placed in different places and wrapped in different materials TAPS changes in materials frozen balloons. Sun and rainbows- Facts about the sun- linking to the wider world and solar system.</p> <p>Spring 2: lifecycles-animals and their young- eggs- Easter Easter time of year- representing new life Animals and their young- grow and develop- matching to young Identify classify and group I wonder why the caterpillar didn't realise what the monkey's mum looked like? - Lifecycles TAPS Ordering animal lifecycles- adapt to meet EYFS</p>	<p>Living things and their habitat Spring1- Living and dead things, Habitats, Identifying and naming plants in their habitats, food chains, how animals are suited to their environment Links to geography topic Contrasting locations Identifying, classifying and grouping How are animals suited to their environment? Sorting and classifying living things using specific criteria Observing over time How do animals/humans change as they grow? Research using secondary sources Which animals live in deserts, jungles, around town, where it is cold?</p> <p>TAPS sorting living and non-living Yr 1 Working Scientifically</p>	<p>Eating and digestion Spring 1/2- Healthy Eating Carnivores, herbivores and omnivores, food chains, teeth, keeping teeth healthy, Functions of the basic parts of the digestive system Time of year- growing fruit and veg- link into whole school planting focus Flow and progression across key stages Identify, classify and group Identify and group animals by features such as those with/without skeletons, how they move, what they eat. Identify and group vertebrate animals such as fish, amphibians, reptiles, birds and mammals and invertebrates such as snails, slugs, worms, spiders and insects. Research using secondary sources What are some of the things that damage healthy teeth?</p>

	<p>(year 2) Working Scientifically link: using their observations and ideas to suggest answers to questions Lifecycles of butterfly -caterpillars in class- Observing over time. Change and transformation and growth Ducks- animals that are born from an egg- duck feathers Research from secondary sources I wonder why ducks' feathers don't get too wet? Wax crayons and compare to preened ducks (wax oil like materials in their spit) (in the moment) Egg to animal- key features of the lifecycle of an animal Egg makes us think of new life Identifying, observing and classifying Do all animals grow inside an egg?</p>	<p>Review: Use of appropriate scientific language to communicate their ideas Plants Spring 2- Identifying and naming common and wild plants and evergreen trees Time of year/ weather Revisit for retrieval learning Identifying, classifying and grouping Distinguish between evergreen and deciduous trees Explore the local <u>environment</u> to name common wildlife Pattern seeking Are all of the same trees in the same area? TAPS- Comparing plant growth in different conditions yr2 Working Scientifically Do: Observe closely, using simple equipment</p>	<p>Pattern seeking How does the digestive system break down different foods? Comparative and fair test How can you best look after your teeth? TAPS Teeth (eggs) in liquids Yr4 Working Scientifically Review: Use results to draw simple conclusions, suggest improvements and raise further questions. TAPS Digestion diagrams Working scientifically review Conceptual Knowledge Focus describe the simple functions of the basic parts of the digestive system in humans</p>
--	--	---	--

Summer

Cycle 1	EYFS Intent	Science KS1 Intent	Science KS2 Intent
	<p>Summer 1: Links into the suitability of everyday objects- linking to texts Once upon a time/ Fantasy and mythical creatures Scenario- Little Red New basket- Comparative and fair testing What is the best material for her basket? (basket, functional, weight, reinforcing materials) Scenario- 3 little pigs Comparative and fair testing I wonder if you can build a house that won't get destroyed? - properties of materials. Predict/ observe, hair dryer 20 secs – Scenario- Billy goats gruff Observing over time I wonder if we can grow green grass?- understanding the world grass/cress seed- lots of different conditions- week Scenario- Jack and the Beanstalk- window- grow a seed in a window bag- time lapse videos- predictions link back to Billy goats gruff- I wonder if without magic a bean can grow quickly?</p>	<p>Summer 1: Uses of everyday materials Identify and compare suitability of materials for different uses. Links into suitability of everyday objects- basket link to text- Into the forest Identifying, classifying and grouping- different materials Name and identify a range of materials. Comparative and fair testing Which material is best for a basket that contains food and liquid? TAPS Water proof materials Yr 2 Working Scientifically Plan: Ask simple questions and recognise that they can be answered in different ways</p>	<p>Summer 1- Sound Links to work on music in history topic. Pattern seeking How do the sounds made by different objects/materials similar or different? What sounds are made when different materials and objects vibrate? How can sounds have different volumes and pitches Comparative and fair testing Which material provides the best soundproofing headphones Can sounds travel through different materials? TAPS Investigating pitch Yr 4 Working Scientifically Plan: Ask relevant questions and use different types of scientific enquiries to answer them</p>

	<p>Princess and the frog- lifecycle – revisit- Research from secondary sources I wonder what a baby frog looks like? Tadpole- frog-</p> <p>3 little bears- similar to eggs- curiosity cube- true or false- all the same size. 3 gummy bears- link to themselves and how they grow. – when we eat as we get older etc. links to maths vocab- describe and comparing of the bears. Discussion based</p> <p>Summer 2: Mini beasts due to the right time of year Mini beasts and outer space Caterpillars (if not done in spring) time dependent Lifecycles- retrieval practice Spiders- sticky web experiment- I wonder why the spider doesn't get stuck in its own web. Research from secondary sources Oil demonstration Insects- prey Bees – save the bees and the environment- simple pollination with wotsits- why they are important – they leave something sticky- spreading pattern seeking Mini beasts and micro habitats- where do they live- what does it need? I wonder why mini beasts don't have a big house like we do? Walk to community centre to look at bug hotels Scavenger hunt- respect habitats- exploring and practical. Journeys- space Evolution of space travel- basic level. When you are older would you like to go to space? Comparative and fair testing TAPS- Working Scientifically adapt to EYFS (Yr2) Rocket mice Do: Perform simple tests to answer questions</p>	<p>Summer 2: Change shape by squashing, bending, twisting and stretching Comparative and fair testing What is the best way to make a strong bridge (or other object by changing shape) Pattern seeking Which ball is the bounciest? Which shaped ball is the best for bouncing? Which fabric is the stretchiest? Observation over time Explore the rigidity of materials TAPS Bridge testers year 1 Enquiry Focus Collect data to compare bridges</p>	<p>Summer 2- Alternative sources of Energy Can we live without electricity? Environmental awareness. (British cities) Maps/wind turbines Link into outdoor and sustainability with outdoor learning too- Croft TAPS Eco action Yr3/4 Science skill focus Recording and communicating</p> <p>++ additional info</p>
--	--	---	--

Whole school overview for Science Cycle 2

Scientific concept areas taught within the concept **justification for the position in the curriculum** scientific enquiry within the topic questions to answer/investigate **TAPS assessment activity to assess skills** Tiered vocabulary (on a separate plan)

Autumn			
Cycle 2	EYFS Science	Science KS1	Science KS2
	Intent	Intent	Intent
	<p>Autumn 1- Our bodies/ Harvest Relevant time and seasons- understanding ourselves Investigating what our bodies can do. Pattern seeking Do all body parts do the same thing? Skeletons- bones Are all of my bones the same size and shape? I wonder what life would be like if I had no bones? Senses What do all of my senses do? Why do we need our senses? Pattern seeking I wonder which sense is the strongest? Dinosaurs diet What diet do we have and compare. Harvest- bread changing state and mixing Observing over time I wonder what will happen if you heat it up or cool your food (mix these together/cook)- predict/ observing Seasonal change Comparative and fair testing Autumn objects- I wonder if nature objects float or sink? Predict and observe. Seasonal change and hibernation (bear/squirrels)- weather-light Season wheels Research from secondary sources. Why do animals hibernate? TAPS seasonal change tree- Note from September through to all seasons- obs over time Working Scientifically Focus Review: using their observations and ideas to suggest answers to questions</p> <p>Autumn 2- Celebrations Time of year Scientist</p>	<p>Autumn 1- Animals including humans. Label parts of human body and senses Identifying and naming animals- fish, amphibians, reptiles etc Links into English texts Identifying, classifying and grouping TAPS Animal classification Yr 1 Working Scientifically Review: Identify and classify</p> <p>Autumn 2- Food chains and healthy eating Carnivore/herbivores/ Omnivores Identifying, classifying and grouping Follows on from previous learning Links to English Seasons- yum yum harvest-growing/eating Identifying, classifying and grouping- What makes a healthy plate of food? Patter seeking Do different foods give you different amounts of energy? Research using secondary sources What foods do humans eat to stay healthy? What <u>food</u> do certain <u>animals</u> prefer to eat?</p> <p>FIND TAPS activity to match</p>	<p>Autumn 1-Rocks and Soils- Early history links into stone age topic which is organised into chronological order Observing over time How have <u>rocks</u> in the <u>environment</u> changed over many years? Identifying, classifying and grouping Grouping different rock types according to observable features such as grains or crystals. TAPS reporting on rocks yr 3 Working Scientifically Review: Reporting on findings from enquiries</p> <p>Autumn 2- Electricity Electrical safety and creating electrical circuits. Linked in to text- The Lost Thing- machinery Pattern seeking What happens when you add/remove batteries/lamps as part of an electrical circuit? Are objects that are magnetic always good electrical conductors? TAPS Does it conduct electricity yr4 Working Scientifically Review: Report on findings from enquires, including oral and written explanations, displays or presentations of results and conclusions.</p>

	<p>Emergency services- finger print exploration NHS/doctor/nurse/vets Who can help us if we need it? Why are doctors and nurses important? How do the police help to keep us safe? Taking care of animals- what do different animals need? What do animals need to stay alive/be healthy? People who help us in our community- visitors into school for talks. (science capital) environmentalists, recycling How can we help our environment? How can we help the world? Christmas- standalone- Dissolving candy cane experiment- observation/ prediction (different liquids and temperatures) recorded time lapse Comparative and fair testing. I wonder if the candy cane melts quicker in cold liquids or hot liquids? Sorting- magnets Pattern seeking How many different ways can you sort the items in the tuff tray. (60 seconds)? Adapted with a magnet- why.problem solving Identifying, grouping and classifying- problem solving I wonder what the best way to sort the materials is? What is the best biscuit for Santa TAPS</p>		
--	---	--	--

Spring

Cycle 2	EYFS Science Intent	Science KS1 Intent	Science KS2 Intent
	<p>Spring 1 - Toys Learn about seasonal change and hibernation. Recap learning. Time of year Toys linking in to post Christmas.</p> <p>Moving toys- How can we make toys move? Explorative Technology and toys- Which toy car is the best and why? Comparing matchbox cars to remote control. Balloon powered cars- How can cars move in other ways. Design a toy of the future Investigation to make toys- what would happen if certain toys were made out of different materials eg rubber duck from toilet roll.</p>	<p>Spring 1- Animals including humans Basic needs of animals in order to survive/ healthy lifestyle Linked to English- Pattern seeking Are the oldest children in the class the tallest? Do the children with the biggest feet have the biggest hands? ++ Add in more enquiry types TAPS Yr2 Comparing hand spans Working Scientifically Review: Using their observations and ideas to suggest answers to questions</p>	<p>Spring 1 & 2 - Forces Understanding and applying laws of force Exploring what forces are: pushes, pulls, forces needing contact, not magnetic forces though, magnetic forces, magnetic objects. Morris Pattern seeking Identifying and classifying Comparative and fair testing TAPS Testing the strength of magnets Yr 3 Working Scientifically Plan: Set up simple practical enquiries, comparative and fair tests</p>

Spring 2 – Homes and Easter

Our home

Materials houses are made of. What materials are suitable to build a house which can withstand weather?

Pattern seeking

What would it be like if I lived...?

Animals and their habitats

What does a habitat need?

Comparative and fair testing

3 little pigs STEM house challenge

Fairy tale homes- Can you build a basket for little red riding hood to carry her things to Grandma STEM challenge.

Scenario- Little Red

New basket-Comparative and fair testing

What is the best material for her basket

Eater- lifecycle of a chick.

Spring and New life- seasonal change and new life.

TAPS Ordering animal lifecycles- adapt to meet EYFS (year 2)

Working Scientifically

link: using their observations and ideas to suggest answers to questions

Spring 2 - Plants

Observe and describe seeds and bulbs growing

Correct time of year to start to plant

Identifying, classifying and grouping

Do bulbs or seeds grow quicker?

Do bulbs and seeds need the same conditions to grow?

Comparative and fair testing

What does a seed need to grow? Exploring the need for light and water for plants to stay healthy.

Observing over time

How do plants change as they grow?

Pattern seeking

Does the seed size determine how big the plant grows?

TAPS Yr1 Plant structure

Working Scientifically

Do: Observe closely using simple equipment

(Observation over time if seasonal)

Summer

Cycle 2	EYFS Science Intent	Science KS1 Intent	Science KS2 Intent
	<p>Summer 1 – Gardens What is in my garden Caterpillars (in class) supporting lifecycles <i>Observation over time</i> What changes do we see for lifecycles? <i>Observation over time/ comparative and fair testing</i> Plants and seeds-What do seeds need to grow? Plants- part of a plant Minibeasts- Spiders- sticky web experiment- <i>Research from secondary sources</i> I wonder why the spider doesn't get stuck in its own web? + food chains Oil demonstration Making bug hotels- mini beast habitat- visit Parks <i>Pattern seeking</i> I wonder what would be the best home/habitat for a mini beast Summer seasonal change/ Releasing butterflies TAPS observing plants and seeds. Adapt to EYFS from yr2 Working Scientifically Focus Do: observe closely</p> <p>Summer 2 – Under the sea and Holidays Sea creatures and their characteristics. Sort by where they live. Explore animals that live in the sea. Similar and diff <i>Identifying, classifying and grouping</i> I wonder if all sea creatures are the same? Pirate ship STEM challenge- float and sink exploring materials and qualities of materials) <i>Comparative and fair testing.</i> Can you build a pirate ship that will hold treasure for a minute without sinking? Holidays discuss countries making comparisons. <i>Pattern seeking/ Identify, classify and sorting</i> Can all animals live in all climates? Match animals to the correct climate. Safari- A destination a day what would you see Space- How do we know about space? Out of this world <i>Comparative and fair testing</i> How far can you launch a rocket mouse? TAPS- Working Scientifically adapt to EYFS (Yr2) Rocket mice. Do: Perform simple tests to answer questions</p>	<p>Summer 1- Everyday materials Identify, and describe properties of materials. Classify and group. Revisited- linked to park materials/properties- real life link <i>Identifying, classifying and grouping</i> Explore properties of <u>materials</u>/characteristic of <u>materials</u> and name the material <i>Comparative and fair testing</i> What materials would the little boy use for his basket when he walks to Grandma's house? TAPS- Year 2 Waterproof materials Working Scientifically Ask questions and Plan: Ask simple questions and recognise that they can be answered in different ways</p> <p>Summer 2- Mini beasts Identify mini beasts. Compare and sort. Time of year. Linked into park theme. <i>Identifying, classifying and grouping-</i></p> <p><i>Pattern seeking</i> Where do we find the most snails/spider/worms/woodlice? TAPS Woodlice habitats Yr 2 Working Scientifically: Record Review: Use straightforward scientific evidence to answer questions or to support their findings</p>	<p>Summer 1- Food and nutrition Healthy lifestyles Humans get nutrition from what they eat, balanced diet, which foods animals eat, human and animal skeletons Link into growing with the St Mary's garden/club/community centre- real life link to growing/eating (WW2 link to rationing- grow your own)</p> <p>TAPS Investigating the human skeleton Yr 3 Working Scientifically Plan: Ask relevant questions and use different types of scientific enquiries to answer them</p> <p>Summer 2- Flowering Plants Parts of flowering plants and reproduction <i>Observing over time</i> What are the stages in a plant life cycle? What happens when a cut flower is stood in coloured water? Right time of year for flowering plants/ developing St Mary's garden area Uttoxeter in Bloom (Link to Geography- how it has changed over time) TAPS Function of a plant stem Yr3 Working Scientifically : Evaluate Review: Use straightforward scientific evidence to answer questions or to support their findings</p>

