

# Curriculum

Science curriculum end points by year group

Learning end points by year group		
EYFS	Unit big question	Development Matters end points
	What kinds of life are there?	Describe what they see, hear and feel whilst outside.
	How do living things work?	Explore the natural world around them. Describe what they see, hear and feel whilst outside
	What makes life go on?	Recognise some environments that are different from the one in which they live Understand the effect of changing seasons on the natural world around them.
	What are materials?	Explore the natural world around them Describe what they see, hear and feel

Learning end points by year group			
Year 1	Unit big question	Substantive knowledge end points	Disciplinary knowledge end points
	<b>Biology- What is alive?</b> <b>NC Objectives</b> Identify and name a variety of common wild and garden plants. Identify and describe the basic structure of common flowering plants. Identify and name a variety of common animals. Identify and name a variety of common animals that are carnivores, herbivores and omnivores	<ol style="list-style-type: none"> <li>1. I know the names of a variety of common wild and garden plants.</li> <li>2. I know that flowering plants have four main parts: petals, stems, leaves and roots.</li> <li>3. TAPS- plant structure</li> <li>4. I know the difference between a deciduous and an evergreen tree.</li> <li>5. TAPS- Leaf looking</li> <li>6. I know how to identify deciduous and evergreen trees.</li> <li>7. I know the names of a variety of local fish and amphibians.</li> <li>8. I know the names of a variety of local reptiles and birds.</li> <li>9. I know the names of variety of local mammals.</li> </ol>	<b>Questioning and enquiry</b> - Ask simple questions about the world.  <b>Investigating</b> - Discuss my ideas <b>Research</b> - Find information - Talk about what I have found <b>Vocabulary</b> - Use simple scientific language - Describe what I can see <b>Identifying and classifying-</b> - Identify and classify with some support -To begin to observe and identify, compare and describe. -To begin to use simple features to compare objects, materials and living things and, with help, decide how to sort and group them. <b>Conclusions</b>

		<p>10. TAPS- Animal classification</p> <p>11. I know that animals eat different things.</p> <p>12. I know that animals eat different things (investigation).</p>	<p>- Talk about what I have found</p> <p>-I can begin to talk about what I have found out.</p> <p>-I can begin to explain how I carried out my enquiry.</p> <p>-I can begin to suggest simple changes to my inquiry.</p>
<p><b>Biology- What are bodies and what can they do?</b></p> <p><b>NC Objectives</b></p> <p>Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense</p> <p>Describe and compare the structure of a variety of common animals.</p>	<p>1. I know the names of basic human body parts.</p> <p>2. I know what ears and eyes are for.</p> <p>3. I know what tongues and noses are for.</p> <p>4. I know that we feel through our skin.</p> <p>5. TAPS- Body parts</p> <p>6. I know the names of basic animal body parts.</p>	<p><b>1. Questioning and enquiry</b></p> <p>- Ask simple questions about the world.</p> <p><b>Investigating</b></p> <p>- Discuss my ideas</p> <p><b>Research</b></p> <p>- Find information</p> <p>- Talk about what I have found</p> <p><b>Vocabulary</b></p> <p>- Use simple scientific language</p> <p>- Describe what I can see</p> <p><b>Identifying and classifying-</b></p> <p>-To begin to observe and identify, compare and describe.</p> <p>-To begin to use simple features to compare objects, materials and living things and, with help, decide how to sort and group them.</p> <p><b>Conclusions</b></p> <p>- Talk about what I have found</p> <p>-I can begin to talk about what I have found out.</p> <p>-I can begin to explain how I carried out my enquiry.</p> <p>-I can begin to suggest simple changes to my inquiry.</p>	
<p><b>Chemistry- What are things made of?</b></p> <p><b>NC Objectives</b></p> <p>Distinguish between an object and the material from which it is made</p> <p>Identify and name a variety of everyday materials</p> <p>Describe the simple physical properties of a variety of everyday materials</p> <p>Compare and group together a variety of everyday materials based on their properties</p>	<p>1. I know that objects are made of materials.</p> <p>2. I know the names of everyday materials.</p> <p>3. I know that different materials have different properties.</p> <p>4. TAPS- floating</p> <p>5. I know that some materials are absorbent</p> <p>6. TAPS- bridge testing</p> <p>7. TAPS- reflective</p> <p>8. TAPS- transparency</p>	<p>1</p> <p><b>Questioning and enquiry</b></p> <p>- Ask simple questions about the world.</p> <p>- Begin to recognise that they can be answered in different ways (different types of enquiry including - observing changes over time, noticing patterns, grouping and classifying, carrying out simple comparative tests, finding things out from secondary sources).</p> <p><b>Investigating</b></p>	

		<p>9. I know that St Helens is famous for glass production.</p>	<ul style="list-style-type: none"> <li>- Discuss my ideas</li> <li>- Perform simple tests with support</li> <li>- Begin to say what happened in my investigation</li> </ul> <p><b>Recording and reporting findings</b></p> <ul style="list-style-type: none"> <li>- Begin to record simple data</li> </ul> <p>Begin to record and communicate my findings in a range of ways</p> <ul style="list-style-type: none"> <li>- Can show my results in a simple table that my teacher has provided</li> </ul> <p><b>Research</b></p> <ul style="list-style-type: none"> <li>- Find information</li> <li>- Talk about what I have found</li> </ul> <p><b>Vocabulary</b></p> <ul style="list-style-type: none"> <li>- Use simple scientific language</li> <li>- Describe what I can see</li> </ul> <p><b>Identifying and classifying-</b></p> <ul style="list-style-type: none"> <li>-To begin to observe and identify, compare and describe.</li> <li>-To begin to use simple features to compare objects, materials and living things and, with help, decide how to sort and group them.</li> </ul> <p><b>Conclusions</b></p> <ul style="list-style-type: none"> <li>- Talk about what I have found</li> <li>-I can begin to talk about what I have found out.</li> <li>-I can begin to explain how I carried out my enquiry.</li> <li>-I can begin to suggest simple changes to my inquiry.</li> </ul>
	<p><b>Biology- Does our world change or stay the same?</b>  <b>NC Objectives</b>          Observe changes across the four seasons          Observe and describe weather associated with the seasons and how day length varies</p>	<ol style="list-style-type: none"> <li>1. TAPS- I know that the four seasons bring changes to the world around me (ongoing).</li> <li>2. I know that the weather changes throughout the year (ongoing)</li> <li>3. I know that the length of each day changes throughout the year (ongoing)</li> </ol>	<p><b>Questioning and enquiry</b></p> <ul style="list-style-type: none"> <li>- Ask simple questions about the world.</li> </ul> <p><b>Investigating</b></p> <ul style="list-style-type: none"> <li>- Discuss my ideas</li> </ul> <p><b>Recording and reporting findings</b></p> <ul style="list-style-type: none"> <li>- Gather and record data with some adult support, to help answering questions</li> </ul> <p><b>Research</b></p> <ul style="list-style-type: none"> <li>- Find information</li> <li>- Talk about what I have found</li> </ul>

			<p><b>Vocabulary</b></p> <ul style="list-style-type: none"> <li>- Use simple scientific language</li> <li>- Describe what I can see</li> </ul> <p><b>Identifying and classifying-</b></p> <ul style="list-style-type: none"> <li>-To begin to observe and identify, compare and describe.</li> <li>-To begin to use simple features to compare objects, materials and living things and, with help, decide how to sort and group them.</li> </ul> <p><b>Conclusions</b></p> <ul style="list-style-type: none"> <li>- Talk about what I have found</li> <li>-I can begin to talk about what I have found out.</li> <li>-I can begin to explain how I carried out my enquiry.</li> <li>-I can begin to suggest simple changes to my inquiry.</li> </ul>
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Learning end points by year group			
Year 2	Unit big question	Substantive knowledge	Disciplinary knowledge
	<p><b>Biology- What is alive, dead or was never alive?</b></p> <p><b>NC Objectives</b></p> <p>Explore and compare the differences between things that are living, dead or never alive</p> <p>Observe and describe how seeds and bulbs grow into mature plants</p> <p>Notice that animals have offspring which grow into adults</p>	<ol style="list-style-type: none"> <li>1. TAPS- living, not living or never living</li> <li>2. I know whether something is alive or dead.</li> <li>3. I know whether something has never been alive.</li> <li>4. I know the seven life processes.</li> <li>5. I know that animals have offspring.</li> <li>6. I know that babies grow into children, and then into adults.</li> <li>7. I know how seeds and bulbs grow into mature plants</li> </ol>	<p>I know how to ask simple questions about the world around me.</p> <p>I know how to discuss my ideas.</p> <p>I know how to use simple equipment e.g., hand lenses, egg timers</p> <p>I know how to observe changes over time</p> <p>I know how to measure with nonstandard units and can being to use simple standard units e.g. mm, cm, m, ml, l, °C</p> <p>I know how to perform simple tests.</p> <p>I know how to explain how I carried out my enquiry.</p> <p>I can say what happened in my investigation.</p> <p>I know how to compare, sort, and group a range of objects, materials and living things.</p> <p>I know how to talk about what I have found out.</p>

		I know how to suggest simple changes to my enquiry.
<p><b>Biology- What do living things need to survive and stay healthy?</b></p> <p><b>NC Objectives</b></p> <p>Identify that most living things live in habitats to which they are suited</p> <p>Identify and name a variety of plants and animals in their habitats</p> <p>Describe how animals obtain their food from plants and other animals (simple food chains)</p> <p>Find out and describe how plants need water, light and a suitable temperature</p> <p>Find out about the basic needs of animals for survival</p> <p>Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene</p>	<ol style="list-style-type: none"> <li>1. TAPS- I know that most living things live in a habitat to which they are suited (woodlice)</li> <li>2. I know several different habitats, and how they provide for the living things within them.</li> <li>3. I know what a microhabitat is.</li> <li>4. TAPS- I know the names of a variety of plants and animals and the habitats within which they live. (nature spotters)</li> <li>5. I know that food, for different animals, come from different places.</li> <li>6. TAPS- Feeding simulator</li> <li>7. I know how create food chains.</li> <li>8. TAPS- I know that plants need water, light, and a suitable temperature to grow.</li> <li>9. I know the basic needs of animals for survival.</li> <li>10. I know the importance to humans of exercise</li> <li>11. I know the importance to humans of eating the right amounts of different types of food.</li> <li>12. I know the importance to humans of good hygiene.</li> <li>13. TAPS- hand spans</li> </ol>	<p>I know how to identify a variety of objects, materials and living things.</p> <p>I know how to ask simple questions about the world around me.</p> <p>I am beginning to notice patterns</p> <p>I know how to find information to help me from books, computers and other familiar sources.</p> <p>I know how to compare something e.g. something is longer or shorter.</p> <p>I know how science helps us in our everyday lives.</p> <p>I know that science can be dangerous e.g. electricity can give you a shock.</p>
<p><b>Chemistry- How do we choose materials?</b></p> <p><b>NC objectives</b></p> <p>Identify and compare the suitability of a variety of everyday materials</p>	<ol style="list-style-type: none"> <li>1. I know the difference between objects, materials, and properties.</li> <li>2. I know the scientific vocabulary used to describe properties.</li> <li>3. TAPS- water proof</li> </ol>	<p>I know how to identify a variety of objects, materials and living things.</p> <p>I know how to compare, sort, and group a range of objects, materials and living things.</p>

	<p>Become familiar with how some materials are used for more than one thing or different materials are used for the same thing. Think about how the properties of materials can make them suitable or unsuitable for particular purposes and encouraged to think about unusual and creative uses for everyday materials.</p>	<ol style="list-style-type: none"> <li>4. I know that the properties of materials make them suitable for particular purposes.</li> <li>5. I know that some objects can be made from more than one material, depending on purpose.</li> <li>6. TAPS- I know how to compare the suitability of different materials.</li> <li>7. TAPS- I know how to combine suitable materials for a given purpose.</li> <li>8. I know that we use different materials at home compared to at school.</li> <li>9. I know that materials are important to St Helens industry.</li> </ol>	<p>I know how to measure with nonstandard units and can being to use simple standard units e.g. mm, cm, m, ml, l, °C I know how to perform simple tests. I know how to collect simple data. I know how to talk about what I have found out.</p>
	<p><b>Chemistry- Can we change materials?</b> <b>NC Objectives</b> Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. Perform simple tests to ascertain the rigidity, flexibility, absorbency, elasticity etc. of different materials, in order to suggest creative uses for them Find out about people have developed useful new materials</p>	<ol style="list-style-type: none"> <li>1- I know that some materials can be changed.</li> <li>2- TAPS- Rocket mice</li> <li>3- I know how to perform simple tests on materials and suggest creative uses for them.</li> <li>4- TAPS- I know how materials can be changed for a given purpose.</li> <li>5- I know how materials can be changed within local industry.</li> <li>6- I know that Charles Macintosh invented a new and useful material.</li> </ol>	<p>I am beginning to use different types of enquiry to answer questions I know how to perform simple tests. I know how to collect simple data. I know how to record data in a table my teacher has provided I know how to explain how I carried out my enquiry. I know how to communicate my findings in a variety of ways. I know how to find information to help me from books, computers and other familiar sources.</p>

Learning end points by year group			
Year 3	Unit big question	Substantive knowledge	Disciplinary knowledge
	<p><b>Biology- How do living things work?</b> <b>NC Objectives</b> Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers</p>	<ol style="list-style-type: none"> <li>1. I know the names of some of the bones in the human body, and where to find them.</li> <li>2. TAPS- I know that not all human skeletons are the same in size.</li> <li>3. I know how muscles work.</li> </ol>	<p><b>RESEARCH</b> I am beginning to carry out simple research on my own <b>OBSERVING AND MEASURING PATTERN SEEKING</b></p>

	<p>Identify that humans and some other animals have skeletons and muscles for support, protection and movement.</p>	<ol style="list-style-type: none"> <li>4. I know that there are both similarities and differences between some animal skeletons.</li> <li>5. I know the names and functions of different parts of a flowering plant.</li> <li>6. TAPS- close observations of different plants (wildlife walk)</li> </ol>	<p>I know how to make accurate measurements using standard measurements.</p> <p><b>VOCABULARY</b> I am beginning to use comparative and superlative descriptions.</p> <p><b>CONCLUSIONS</b> I am beginning to answer questions from what I have found out.</p> <p><b>IDENTIFYING , GROUPING AND CLASSIFYING</b> I am beginning to identify similarities and differences in the properties of living things</p> <p><b>VOCABULARY</b> DISECTING A PLANT – I am beginning to use scientific language</p>
	<p><b>Biology- Do living things need different things to survive?</b> <b>NC Objectives</b> Explore the requirements of plants for life and growth and how they vary from plant to plant Investigate the way in which water is transported within plants Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat</p>	<ol style="list-style-type: none"> <li>1. I know that humans get nutrition from what they eat.</li> <li>2. I know that humans need a balanced diet in order to stay healthy.</li> <li>3. I know that animals require different diets to humans.</li> <li>4. TAPS- I know that different plants have different requirements for water, air, and nutrition, for healthy growth (measuring plants)</li> <li>5. TAPS- I know how water travels within plants (function of a stem)</li> <li>6. I know the life cycle of flowering plants.</li> </ol>	<p><b>IDENTIFYING , GROUPING AND CLASSIFYING</b> I am beginning to discuss criteria for groupings</p> <p><b>INVESTIGATING</b> I am beginning to help decide which variables to keep the same and which to change (Plants in different environments) I know how to set up some simple practical enquiries including comparative and fair testing</p> <p><b>QUESTIONING AND ENQUIRING</b> I can ask relevant questions about the world around me</p> <p><b>OBSERVING AND MEASURING PATTERN SEEKING</b> I can decide what to observe and how to collect observations.</p> <p><b>RECORDING AND REPORTING FINDINGS</b> I am beginning to help to decide how to record the data. I am beginning to collect data in a variety of ways including labelled diagrams, bar charts and tables</p> <p><b>INVESTIGATING</b></p>

			I know how to set up some simple practical enquiries including comparative and fair testing.
<p><b>Physics- What is the dark?</b>  <b>NC Objectives</b>  Recognise that they need light in order to see things and that dark is the absence of light  Notice that light is reflected from surfaces  Recognise that light from the sun can be dangerous and that there are ways to protect their eyes  Recognise that shadows are formed when the light from a light source is blocked by an opaque object  Find patterns in the way that the size of shadows change.</p>	<ol style="list-style-type: none"> <li>1. I know that I need light to see things.</li> <li>2. I know that light is reflected from surfaces.</li> <li>3. I know that some objects allow light to pass through.</li> <li>4. I know that sunlight can be dangerous.</li> <li>5. TAPS- I know that shadows are formed when light is blocked.</li> <li>6. I know that the size of a shadow is not fixed but can change.</li> </ol>	<p><b>OBSERVING AND MEASURING PATTERN</b>  <b>SEEKING</b>  I know how to look for patterns and relationships  I can decide what equipment to use  I can decide what to observe and how to collect observations  <b>QUESTIONING AND ENQUIRING</b>  I am beginning to decide what different types of enquiry  <b>CONCLUSIONS</b>  I am beginning to say what I have found out linking cause and effect.</p>	
<p><b>Physics- What can magnets do?</b>  <b>NC Objectives</b>  Compare how things move on different surfaces  Notice that some forces need contact between two objects, but magnetic forces can act at a distance  Observe how magnets attract or repel each other and attract some materials and not others  Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials  Describe magnets as having two poles  Predict whether two magnets will attract or repel each other, depending on which poles are facing.</p>	<ol style="list-style-type: none"> <li>1. TAPS- I know that different objects move differently depending on the surface. (car ramps)</li> <li>2. TAPS- I know that different objects move differently depending on the surface (rocket balloon)</li> <li>3. I know that magnetic forces can act at a distance.</li> <li>4. TAPS- I know that magnets can attract and repel, depending on the material.</li> <li>5. I know that magnets have two poles.</li> <li>6. I know that William Gilbert helped us understand how compasses work.</li> </ol>	<p><b>CONCLUSIONS</b>  I am beginning to say what I have found out linking cause and effect.  I am beginning to draw simple conclusions based on the results of my enquiry  <b>UNDERSTANDING</b>  I am beginning to know which things in science have made our lives better (Compasses)  <b>VOCABULARY</b>  I am beginning to think of cause and effect  <b>QUESTIONING AND ENQUIRY</b>  I know how to use different types of enquiry to answer questions</p>	
<p><b>Chemistry- Are all rocks the same?</b>  <b>NC Objectives</b></p>	<ol style="list-style-type: none"> <li>1. I know that rocks have similarities and differences.</li> <li>2. I know that some rocks are harder than others.</li> </ol>	<p><b>OBSERVING AND MEASURING PATTERN</b>  <b>SEEKING</b>  I can make systematic and careful observations  <b>CONCLUSIONS</b></p>	

	<p>Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties</p> <p>Describe in simple terms how fossils are formed when things that have lived are trapped within rock</p> <p>Recognise that soils are made from rocks and organic matter.</p>	<ol style="list-style-type: none"> <li>3. I know that some rocks are permeable.</li> <li>4. I know that rocks can be synthetic or natural.</li> <li>5. TAPS- Rock report</li> <li>6. I how fossils are formed.</li> <li>7. I know that Mary Anning helped develop our knowledge of fossils.</li> <li>8. I know that there are different layers within soil.</li> </ol>	<p>I am beginning to draw simple conclusions based on the results of my enquiry</p> <p>I am beginning to use my findings to make new predictions, suggest improvements and think of new questions.</p> <p><b>INVESTIGATING</b></p> <p>I am beginning to help decide which variables to keep the same and which to change.</p> <p>I am beginning to help decide which variables to keep the same and which to change (Plants in different environments)</p> <p>I know how to set up some simple practical enquiries including comparative and fair testing</p> <p><b>QUESTIONING AND ENQUIRY</b></p> <p>I know how to use different types of enquiry to answer questions.</p> <p><b>RECORDING AND REPORTING FINDINGS</b></p> <p>I am beginning to help to decide how to record the data.</p> <p>I am beginning to collect data in a variety of ways including labelled diagrams, bar charts and tables</p> <p>I am beginning to communicate findings using simple scientific language</p> <p><b>RESEARCH</b></p> <p>I am beginning to decide when research will help in my enquiry</p>
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Learning end points by year group			
Year 4	<p>Unit big question</p> <p><b>Biology- Living things: What's the same and what's different?</b></p> <p><b>NC Objectives</b></p> <p>Recognise that living things can be grouped in a variety of ways</p>	<p>Substantive knowledge</p> <ol style="list-style-type: none"> <li>1. I know how to identify vertebrates based on observable characteristics.</li> <li>2. I know how to identify common plants based on observable characteristics.</li> </ol>	<p>Disciplinary knowledge</p> <p><b>Questioning &amp; enquiring-</b></p> <p>I know how to ask some relevant questions about the world around me.</p> <p><b>Observing and measuring and pattern seeking-</b></p>

<p>Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment Recognise that environments can change and that this can sometimes pose dangers to living things.</p>	<ol style="list-style-type: none"> <li>3. TAPS- I know that living things can be grouped in different ways (local survey)</li> <li>4. I know how to create classification keys.</li> <li>5. I know how my local environment has changed.</li> <li>6. I know that environmental dangers threaten endangered species.</li> </ol>	<p>I know how to look for patterns and relationships. <b>Identifying, grouping and classifying-</b> I can talk about and identify differences and similarities in the properties or behaviour of living things, materials and other scientific phenomena. I know how to discuss criteria for grouping and sorting and can classify using simple keys. <b>Conclusions-</b> I am beginning to think of cause and effect in my explanations. <b>Vocabulary-</b> I know how to use comparative and superlative descriptions e.g. longer/shorter than, longest/shortest</p>
<p><b>Biology- What do our bodies do with the food we eat?</b> <b>NC Objectives</b> Describe the simple functions of the basic parts of the digestive system in humans Identify the different types of teeth in humans and their simple functions Construct and interpret a variety of food chains, identifying producers, predators and prey</p>	<ol style="list-style-type: none"> <li>1. I know how to model the digestive system (digestive system model)</li> <li>2. I know how the digestive system works (explanation)</li> <li>3. I know the function of different human teeth.</li> <li>4. TAPS- I know how to look after my teeth.</li> <li>5. I know that the teeth of carnivores and herbivores differ</li> <li>6. I know how to construct different food chains.</li> </ol>	<p><b>Observing and measuring and pattern seeking-</b> I know how to make systematic and careful observations. <b>Recording and reporting findings-</b> I know how to collect data in a variety of ways, including labelled diagrams, bar charts and tables. <b>Identifying, grouping and classifying-</b> I know how to discuss criteria for grouping and sorting and can classify using simple keys. <b>Vocabulary-</b> I can use scientific language in my work.</p>
<p><b>Physics- How do we hear sounds?</b> <b>NC Objectives</b> Identify how sounds are made, associating some of them with something vibrating Recognise that vibrations from sounds travel through a medium to the ear</p>	<ol style="list-style-type: none"> <li>1. I know where sounds come from.</li> <li>2. TAPS- I know how sounds travel.</li> <li>3. TAPS- I know how to manipulate pitch.</li> <li>4. I know how to manipulate volume.</li> <li>5. I know how distance affects sound volume.</li> </ol>	<p><b>Observing and measuring pattern seeking-</b> I can decide which equipment to use and can use new equipment e.g. dataloggers. <b>Recording and reporting findings-</b></p>

	<p>Find patterns between the pitch of a sound and features of the object that produced it          Find patterns between the volume of a sound and the strength of the vibrations that produced it          Recognise that sounds get fainter as the distance from the sound source increases.</p>	<p>6. I know how to look after my ears.</p>	<p>I know how to collect data in a variety of ways, including labelled diagrams, bar charts and tables.  <b>Research-</b> I know how to carry out simple research on my own.  <b>Conclusions-</b> I know how to answer questions from what I have found out.          I know how to draw simple conclusions based on the results of my enquiry.  <b>Vocabulary-</b> I know how to describe my observations and findings.  <b>Understanding-</b> I understand that there is some risk in science.</p>
	<p><b>Physics- Can we control electricity?</b>  <b>NC Objectives</b>          Identify common appliances that run on electricity          Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers          Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery          Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit          Recognise some common conductors and insulators, and associate metals with being good conductors.</p>	<ol style="list-style-type: none"> <li>1. I know how electricity is generated.</li> <li>2. I know that some common appliances run on electricity.</li> <li>3. I know how to stay safe around electricity.</li> <li>4. I know how to create a simple electrical circuit</li> <li>5. TAPS- I know that some materials are electrical conductors, and others are insulators.</li> <li>6. I know how switches work and why they are needed.</li> </ol>	<p><b>Questioning &amp; enquiring-</b>          I know how to ask some relevant questions about the world around me.  <b>Observing and measuring pattern seeking-</b>          I know how to make systematic and careful observations.          I can decide what to observe and how to collect observations.          I can decide which equipment to use and can use new equipment e.g. electrical circuit set  <b>Investigating-</b>          I know how to set up some simple practical enquiries, including comparative and fair testing.          I can help decide which variables to keep the same and which to change.  <b>Recording and report findings-</b>          I can communicate findings using simple scientific language.  <b>Research-</b> I know how to carry out simple research on my own.</p>

			<p><b>Conclusions-</b> I know how to spot patterns in my results. I know how to say what I have found out, linking cause and effect. I know how I could make it better. I know how to use my findings to make new predictions, suggest improvements and think of new questions.</p> <p><b>Vocabulary-</b> I can use scientific language in my work.</p> <p><b>Understanding-</b> I know which things in science have made our lives better e.g. computers in schools, hospitals.</p>
	<p><b>Chemistry- Is water always wet?</b> <b>NC Objectives</b> Compare and group materials together, according to whether they are solids, liquids or gases Observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C) Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.</p>	<ol style="list-style-type: none"> <li>1. I know that materials can be grouped according to whether they are solids, liquids, or gases.</li> <li>2. I know that gases can be weighed and are useful.</li> <li>3. TAPS- I know that the temperature of materials can be measured in °C.</li> <li>4. I know that water changes state when it is heated or cooled.</li> <li>5. I know that some materials change state when they are heated or cooled.</li> <li>6. I know how evaporation and condensation affect the water cycle.</li> <li>7. TAPS- drying</li> </ol>	<p><b>Questioning &amp; enquiring-</b> I know how to ask some relevant questions about the world around me.</p> <p><b>Observing and measuring pattern seeking-</b> I know how to make systematic and careful observations. I can decide what to observe and how to collect observations. I know how to take accurate measurements using standard units e.g. mm, cm, m, ml, l, °C, seconds, minutes. I can decide which equipment to use and can use new equipment e.g. thermometers, measuring equipment</p> <p><b>Investigating-</b> I know how to set up some simple practical enquiries, including comparative and fair testing. I can help decide which variables to keep the same and which to change.</p> <p><b>Recording and report findings-</b></p>

			<p>I know how to collect data in a variety of ways, including labelled diagrams, bar charts and tables.</p> <p>I can communicate findings using simple scientific language.</p> <p><b>Conclusions-</b></p> <p>I know how to say what I have found out, linking cause and effect.</p> <p>I know how to answer questions from what I have found out.</p> <p>I know how to use my findings to make new predictions, suggest improvements and think of new questions.</p> <p><b>Vocabulary-</b> I can use scientific language in my work.</p>
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Learning end points by year group			
Year 5	Unit big question	Substantive knowledge	Disciplinary knowledge

<p><b>Biology- Do all life cycles look the same?</b>  <b>NC Objectives</b>  Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird <b>(including protected species in St Helens- Great Crested Newt <i>Triturus cristatus</i>, and water vole <i>Arvicola aquaticus</i>)</b>  Describe the life process of reproduction in some plants and animals.  Describe different types of reproduction, including sexual and asexual</p>	<ol style="list-style-type: none"> <li>1. I know that most mammal life cycles are similar to each other (local and endangered)</li> <li>2. I know how mammals reproduce</li> <li>3. I know how Jane Goodall revolutionised our knowledge of primates.</li> <li>4. TAPS- I know how amphibian, insect and bird life cycles differ to mammal life cycles.</li> <li>5. I know how plants reproduce, both sexually and asexually.</li> <li>6. I know how the life cycles of different plants differ.</li> </ol>	<p><b>Questioning and enquiring</b>  I am beginning to explore ideas and ask my own questions about scientific phenomena</p> <p><b>Research</b>  I am beginning to recognise which secondary source will be most useful to my research. I know how to carry out research independently.</p> <p><b>Vocabulary</b>  I am beginning to read, spell and pronounce scientific vocabulary correctly. I am beginning to confidently use the correct scientific language when appropriate. I am beginning to explain my ideas with scientific reasons. I am beginning to use scientific conventions e.g. trends, rogue result, support prediction.</p> <p><b>Identifying, grouping, &amp; classifying</b>  I am beginning to use keys and other information records to classify and describe living things, materials and other scientific phenomena. I am beginning to develop my own keys and other information records to classify and describe. I am beginning to identify changes related to scientific phenomena.</p>
<p><b>Biology- How do our bodies change as we get older?</b>  <b>NC Objectives</b>  Describe the changes as humans develop to old age. They should learn about the changes experienced in puberty</p>	<ol style="list-style-type: none"> <li>1. I know that humans undergo six stages of development</li> <li>2. TAPS- I know how to measure human growth.</li> <li>3. I know that different mammals have different gestation periods to humans.</li> <li>4. I know how humans change during puberty</li> </ol>	<p><b>Questioning and enquiring</b>  I am beginning to explore ideas and ask my own questions about scientific phenomena</p> <p><b>Vocabulary</b>  I am beginning to read, spell and pronounce scientific vocabulary correctly. I am beginning to confidently use the correct scientific language</p>

			when appropriate. I am beginning to explain my ideas with scientific reasons. I am beginning to use scientific conventions e.g. trends, rogue result, support prediction.
<p><b>Physics- Earth, Sun and Moon- what's moving?</b></p> <p><b>NC Objectives</b></p> <p>Describe the movement of the Earth, and other planets, relative to the Sun in the solar system</p> <p>Describe the movement of the Moon relative to the Earth</p> <p>Describe the Sun, Earth and Moon as approximately spherical bodies</p> <p>Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.</p> <p>Describe the Sun as a star at the centre of our solar system and that it has eight planets: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune (Pluto was reclassified as a 'dwarf planet' in 2006).</p> <p>Understand that a moon is a celestial body that orbits a planet (Earth has one moon; Jupiter has four large moons and numerous smaller ones).</p>	<ol style="list-style-type: none"> <li>1. I know that the Sun, Moon and Earth are spherical bodies.</li> <li>2. I know that the Sun is a star at the centre of our solar system and that it has eight planets</li> <li>3. I know how the eight planets move relative to the Sun</li> <li>4. TAPS – I know how meteors crashing into planets create craters.</li> <li>5. I know how the Earth's rotation creates 'day' and 'night'</li> <li>6. I know that a Moon is a celestial body orbiting a planet, and how our Moon orbits the Earth.</li> </ol>	<p><b>Questioning and enquiring</b></p> <p>I am beginning to explore ideas and ask my own questions about scientific phenomena</p> <p><b>Vocabulary</b></p> <p>I am beginning to read, spell and pronounce scientific vocabulary correctly. I am beginning to confidently use the correct scientific language when appropriate. I am beginning to explain my ideas with scientific reasons. I am beginning to use scientific conventions e.g. trends, rogue result, support prediction.</p> <p><b>Research</b></p> <p>I am beginning to recognise which secondary source will be most useful to my research. I know how to carry out research independently.</p> <p><b>Understanding</b></p> <p>I am beginning to see how science is useful in lots of ways. I am beginning to say which parts of our lives rely on science. I am beginning to explain the positive and negative effects of scientific developments</p>	
<p><b>Physics- How do things move?</b></p> <p><b>NC Objectives</b></p> <p>Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object</p>	<ol style="list-style-type: none"> <li>1. I know why unsupported objects fall towards the Earth.</li> <li>2. I know that Isaac Newton developed a theory of gravity.</li> </ol>	<p><b>Questioning and enquiring</b></p> <p>I am beginning to explore ideas and ask my own questions about scientific phenomena</p> <p><b>Observing &amp; measuring pattern seeking</b></p>	

	<p>Identify the effects of air resistance, water resistance and friction, that act between moving surfaces Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.</p>	<ol style="list-style-type: none"> <li>3. TAPS- I know how air resistance affects moving objects.</li> <li>4. TAPS- I know how water resistance affects moving objects.</li> <li>5. I know how friction affects moving objects.</li> <li>6. I know that levers, gears and pulleys allow a smaller force to have a greater effect.</li> </ol>	<p>I know how to make accurate and precise measurements. I can decide what to observe, how long to observe for and whether to repeat readings. I know how to take precise and accurate measurements using standard units, e.g. N, g, kg, mm, cm, seconds, minutes, cm<sup>2</sup>V, km/h, m per second. I know how to select equipment on my own and can explain how to use it accurately.</p> <p><b>Vocabulary</b></p> <p>I am beginning to read, spell and pronounce scientific vocabulary correctly. I am beginning to confidently use the correct scientific language when appropriate. I am beginning to explain my ideas with scientific reasons. I am beginning to use scientific conventions e.g. trends, rogue result, support prediction.</p> <p><b>Research</b></p> <p>I am beginning to recognise which secondary source will be most useful to my research. I know how to carry out research independently.</p> <p><b>Understanding</b></p> <p>I am beginning to see how science is useful in lots of ways. I am beginning to say which parts of our lives rely on science. I am beginning to explain the positive and negative effects of scientific developments</p>
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	<p><b>Chemistry- What are things made of?</b></p> <p><b>NC Objectives</b></p> <p>Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets</p> <p>Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution</p> <p>Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating</p> <p>Demonstrate that dissolving, mixing and changes of state are reversible changes</p> <p>Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic</p>	<ol style="list-style-type: none"> <li>1. I know that materials can be grouped together on the basis of their properties.</li> <li>2. TAPS- I know that some materials will dissolve in a liquid to form a solution</li> <li>3. I know how to separate mixtures and that they are reversible changes.</li> <li>4. I know which materials are thermal insulators and which are conductors</li> <li>5. TAPS- thermal insulation layers</li> </ol>	<p><b>Questioning and enquiring</b></p> <p>I am beginning to explore ideas and ask my own questions about scientific phenomena I am beginning to plan different types of scientific enquiry to answer questions. I am beginning to decide which variables to control.</p> <p><b>Investigating</b></p> <p>I know how to set up a range of comparative and fair tests. I am beginning to explain which variables need to be controlled and why. I am beginning to suggest improvements to my test, giving reasons.</p> <p><b>Vocabulary</b></p> <p>I am beginning to read, spell and pronounce scientific vocabulary correctly. I am beginning to confidently use the correct scientific language when appropriate. I am beginning to explain my ideas with scientific reasons. I am beginning to use scientific conventions e.g. trends, rogue result, support prediction.</p> <p><b>Understanding</b></p> <p>I am beginning to see how science is useful in lots of ways. I am beginning to say which parts of our lives rely on science. I am beginning to explain the positive and negative effects of scientific developments</p> <p><b>Recording &amp; reporting findings</b></p> <p>I am beginning to record data and results of increasingly complexity using- scientific diagrams and labels, classification keys, tables, bar graphs, line graphs. I am beginning to</p>
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			<p>choose how best to present data. I am beginning to communicate findings using detailed scientific language.</p> <p><b>Conclusions</b></p> <p>I am beginning to draw scientific causal conclusions using the results of an enquiry to justify my ideas. I am beginning to explain my conclusion using scientific knowledge and understanding I am beginning to distinguish opinion and facts. I am beginning to use my findings to make predictions and set up further enquiries. I am beginning to use abstract models to explain my ideas.</p>
	<p><b>Chemistry- Can we change materials?</b>  <b>NC Objectives</b>          Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.</p>	<ol style="list-style-type: none"> <li>1. I know that some changes result in the formation of new materials and that these are sometimes irreversible changes.</li> <li>2. I know that plastic has had a huge impact on our world.</li> <li>3. I know that using fossil fuels has had a huge impact on our world.</li> </ol>	<p><b>Questioning and enquiring</b></p> <p>I am beginning to explore ideas and ask my own questions about scientific phenomena I am beginning to plan different types of scientific enquiry to answer questions. I am beginning to decide which variables to control.</p> <p><b>Vocabulary</b></p> <p>I am beginning to read, spell and pronounce scientific vocabulary correctly. I am beginning to confidently use the correct scientific language when appropriate. I am beginning to explain my ideas with scientific reasons. I am beginning to use scientific conventions e.g. trends, rogue result, support prediction.</p> <p><b>Understanding</b></p> <p>I am beginning to see how science is useful in lots of ways. I am beginning to say which parts of our lives rely on science. I am beginning to</p>

			explain the positive and negative effects of scientific developments
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Learning end points by year group			
Year 6	Unit big question	Substantive knowledge	Disciplinary knowledge
	<p><b>Biology- How do our choices affect how our bodies work?</b></p> <p><b>NC Objectives</b></p> <p>Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood</p> <p>Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function</p> <p>Describe the ways in which nutrients and water are transported within animals, including humans.</p>	<ol style="list-style-type: none"> <li>1. I know what blood is comprised of, and the jobs of each of its different parts (including blood conditions).</li> <li>2. I know the names of the main parts of the human circulatory system and can describe their functions (heart, veins and arteries)</li> <li>3. TAPS- I know that exercise has an impact on my body</li> <li>4. I know the names of the main parts of the human circulatory system and can describe their functions (lung size: student height)</li> <li>5. I know how food and water is transported within the body.</li> <li>6. I know how sugar affects my body.</li> <li>7. I know how drugs and alcohol affects my body.</li> </ol>	<p><b>Investigating</b></p> <p>I know how to set up a range of comparative and fair tests.</p> <p>I can explain which variables need to be controlled and why.</p> <p>I can suggest improvements to my test, giving reasons.</p> <p><b>Observing and measuring, pattern seeking</b></p> <p>I know how to make accurate and precise measurements.</p> <p>I know what to observe, how long to observe for and whether to repeat readings.</p> <p>I know how to take precise and accurate measurements using standard units, e.g. N, g, kg, mm, cm, seconds, minutes, cm<sup>2</sup>V, km/h, m per second.</p> <p>I know how to select equipment on my own and can explain how to use it accurately.</p> <p><b>Recording and reporting findings</b></p> <p>I can record data and results of increasingly complexity using- scientific diagrams and labels,</p>

			<p>classification keys, tables, bar graphs, line graphs.</p> <p>I can choose how best to present data</p> <p>I can communicate findings using detailed scientific language.</p>
<p><b>Biology- Living things- what's the same and what's different?</b></p> <p><b>NC Objectives</b></p> <p>Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals</p> <p>Give reasons for classifying plants and animals based on specific characteristics</p>	<ol style="list-style-type: none"> <li>1. I know how to create and use a classification key.</li> <li>2. I know how to carry out research independently (Carl Linnaeus)</li> <li>3. I know how to sort plants and animals using the Linnaean system. (tree hunt)</li> <li>4. TAPS- Report and present findings from enquiries using appropriate scientific language (invertebrates)</li> <li>5. I know how micro-organisms are subdivided, and which can be useful or harmful.</li> <li>6. I know how to set up and carry out comparative and fair tests (mould)</li> </ol>	<p><b>Identifying, grouping and classifying</b></p> <p>I know how to use keys and other information records to classify and describe living things, materials and other scientific phenomena.</p> <p>I can develop my own keys and other information records to classify and describe.</p> <p>I know how to identify changes related to scientific phenomena.</p>	
<p><b>Biology- How do living things change over time?</b></p> <p><b>NC Objectives</b></p> <p>Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago</p> <p>Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents</p> <p>Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.</p>	<ol style="list-style-type: none"> <li>1. I know why offspring look similar to their parents.</li> <li>2. I know how natural selection altered the colour of the peppered moth.</li> <li>3. I know how the Galapagos finches adapted to suit their new environments</li> <li>4. I know how local animals have adapted to suit their environments.</li> <li>5. I know that Charles Darwin used his observations to develop his theory of evolution</li> <li>6. TAPS- I know how fossil evidence has been used to help us understand evolution.</li> </ol>	<p><b>Research</b></p> <p>I know which secondary source will be most useful to my research.</p> <p>I know how to carry out research independently.</p> <p><b>Questioning and enquiring</b></p> <p>I know how to explore ideas and ask my own questions about scientific phenomena</p> <p>I know how to plan different types of scientific enquiry to answer questions.</p> <p><b>Conclusions</b></p> <p>I know how to draw scientific causal conclusions using the results of an enquiry to justify my ideas.</p>	

			I know how to distinguish between opinion and facts.
<p><b>Physics- How do we see?</b>  <b>NC Objectives</b>  Recognise that light appears to travel in straight lines  Use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye  Explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes  Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.</p>	<ol style="list-style-type: none"> <li>1. I know where light comes from and how it travels</li> <li>2. I know that when light hits an object, it will reflect.</li> <li>3. I know that when light travels from one medium to another, it will refract.</li> <li>4. I know why different objects appear different colours.</li> <li>5. I know that white light is comprised of different colours.</li> <li>6. TAPS- I know how shadows are formed and how they can be manipulated.</li> </ol>	<p><b>Observing and measuring, pattern seeking</b>  I know how to make accurate and precise measurements.  I know what to observe, how long to observe for and whether to repeat readings.  I know how to take precise and accurate measurements using standard units, e.g. N, g, kg, mm, cm, seconds, minutes, cm<sup>2</sup>V, km/h, m per second.  I know how to select equipment on my own and can explain how to use it accurately.</p> <p><b>Conclusions</b>  I can use abstract models to explain my ideas.</p>	
<p><b>Physics- Can we vary the effects of electricity?</b>  Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit  Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches  Use recognised symbols when representing a simple circuit in a diagram.</p>	<ol style="list-style-type: none"> <li>1. I know how to represent the circuits I make using recognised symbols.</li> <li>2. I know that the number and voltage of cells within my circuits will affect other components.</li> <li>3. TAPS- I know how to manipulate the brightness of a bulb</li> <li>4. I know how to apply my knowledge in a real-world scenario.</li> <li>5. TAPS- conductive dough</li> <li>6. I know how we keep ourselves safe from the dangers of electricity.</li> </ol>	<p><b>Questioning and enquiring</b>  I know how to explore ideas and ask my own questions about scientific phenomena  I know how to plan different types of scientific enquiry to answer questions.  I know how to decide which variables to control.</p> <p><b>Recording and reporting findings</b>  I can record data and results of increasingly complexity using- scientific diagrams and labels, classification keys, tables, bar graphs, line graphs.  I can choose how best to present data  I can communicate findings using detailed scientific language.</p> <p><b>conclusions</b></p>	

			I can explain my conclusion using scientific knowledge and understanding I know how to use my findings to make predictions and set up further enquiries.
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Throughout Year 6 study

<b>Vocabulary</b>	I can confidently use the correct scientific language when appropriate.
	I know how to explain my ideas with scientific reasons.
	I know how to use scientific conventions e.g. trends, rogue result, support prediction.
<b>Understanding</b>	I can see how science is useful in lots of ways.
	I know which parts of our lives rely on science.
	I can explain the positive and negative effects of scientific developments.