Hunnyhill Primary School - Skills Progression in Science

		EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Asking questions	NC	-	Asking simple questions and recognising that they can be answered in different ways		Asking relevent questions and using different types of scientific enquiries to answer them		Planning different types of enquiries to answer questions, including recognising and controlling variables where necessary	
	KPIs	Shows curiosity about objects, events and people. Questions why things happen. Asks questions to clarify understanding and aspects of their familiar world e.g. place they live or natural world.	Explore the world around them and raise own questions. (e.g growing, animals in their habitat, everyday materials.) Can answer questions supported by the teacher, often through scenarios and recognise questions can be answered in different ways. Can begin to ask simple questions and use simple secondary sources to find answers. Able to ask yes and no questions to sort and classify.	Raise questions that help them become familiar with scientific processes (e.g life processes that are common to all living things, their local environment, materials) Can ask simple questions relevant to the topic. Can use a range of question stems. (e.g. Is a flame alive? Is a deciduous tree dead in winter? What makes the best habitat for a minibeast? Where in the school can we find something that is made of wood? Which animal belongs to which offspring? Do seeds grow quicker inside or out?) Know their questions can be answered in different ways. Use more than one secondary source to gather and present information clearly.	Raise own questions about the world around them and why this happens the way they do (e.g. the role of the roots and stem in nutrition and support, or how rocks are formed) Recognise how and when to use secondary sources to answer questions that cannot be answered in practical science. Can write a range of questions relevant to the topic. Can answer questions posed by the teacher, independently or with support. Identify new questions from data. Can raise questions and carry out tests with support to find things out. Can carry out research using a small range of secondary sources.	Can decide how to gather evidence to answer questions. Raise questions to help identify and group (such as how a habitat changes, animals and living things including plants). Can write a range of questions using the world around them and their own scientific knowledge. They recognise when secondary sources can be used to answer questions and can select appropriate information from sources.	Can study and raise questions to answer (including about their local environment throughout the year). Can ask relevant questions and suggest reasons for similarities and differences. Use their scientific experiences to explore ideas and raise different questions. Can create further questions from enquiries to investigate. Independently uses secondary sources to find relevant facts about a topic. Raise further questions from enquiries/research.	Can raise questions about local animals and how they are adapted to their environment. Can raise questions about a range of phenomena e.g., rainbows, colours on soap bubbles, objects looking bent in water. Can ask questions about a range of materials in order to support classification. Asks appropriate questions to group and classify. Can use secondary sources to research (e.g., unfamiliar animals and plants from a broad range of habitats). Use ideas from secondary sources to support their ideas. Can raise questions to further prove a scientific enquiry.

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Planning Enquiries	NC	-	Asking simple questions and recognising that they can be answered in different ways. Performing simple tests.		Setting up up simple practical enquiries, comparative and fair tests		Planning different types of enquiries to answer questions, including recognising and controlling variables where necessary	
	KPIs	Find ways to solve problems/find new ways to do things. Test out ideas. Take risks through trial and error. Engage in open ended activities. Choose the resources they need for their chosen activity from their environment.	Begin to recognise different ways they may answer scientific questions. Experience different types of enquiry including practical activities. Use practical resources provided by the teacher and can suggest some resources of their own. Can carry out simple tests to classify, compare or pattern seek.	Carry out simple comparative tests using own ideas Experience different types of enquiry including practical activities. Within the planning frame can suggest resources they may need for the test. Can carry out simple tests linked to the types of enquiry: observation, testing, pattern seeking, identifying and classifying and research.	Perform a range of scientific investigations including different types of scientific enquiry. Set up practical enquiries: comparative, and fair tests. (post it note approach scaffolded by the teacher). Children investigate and answer own questions linked to shared post it note planning frame Understand there are different variables to be controlled. (Can identify some variables e.g. what was changed and what was kept the same) Follow basic instructions scaffolded by the teacher to conduct investigation. Use a range of equipment using thermometers and data loggers (with support).	Can identify the type of enquiry needed to answer a question. Follow a plan to carry out observations and tests. Can select from a range of resources to gather evidence and answer questions, to classify, compare and perform fair tests. Use post it note planning approach with more independence in identifying variables andwhat needs measuring. Children choose their method to carry out the investigation.	Recognise when and how to set up comparative and fair tests and explain which variables need to be controlled and changed. Can identify independent and dependent variables to identify causal relationships. Understand what type of scientific enquiry is needed to answer and prove/disprove scientific questions or phenomenon.	Children choose the type of enquiry needed to carry out their investigation. Children can pose and answer their own questions, controlling variables where necessary independently. Decide whether they need to increase the sample size for validity. Children understand how to gather data to prove a prediction. Can identify a range of factors which may affect their investigation.

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Making Predictions	NC		Using their observations and ideas to suggest answers to questions		Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions		Using test results to make predictions to set up further comparative and fair tests	
	KPIs	Shows curiosity about objects, events and people. Questions why things happen.	Can make basic predictions over things they can see or their own ideas. Can use some scientific vocabulary.	Draws on knowledge from observations to make a prediction. Can begin to test predictions and later answer questions (predictions can be a guess). Ask questions about what might happen in the future.	Uses evidence and subject knowledge to refute statements. Make predictions from questions posed. Makes further predictions from what is observed or tested.	Use subject knowledge or research to make predictions. Raise further predictions from results based on patterns. Make predictions for new values.	Use subject knowledge, observations, or previous learning to make predictions. Can add further detail and explanations for their predictions when prompted. Can base predictions on previous scientific enquiry. Can identify a range of variables which could affect their investigation.	Develops predictions not based on results of a scientific enquiry but using own ideas and subject knowledge. Use evidence to support predictions. Gathers evidence through practical science to support predictions. Use test result to make predictions to set up further comparative and fair tests.

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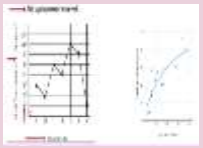
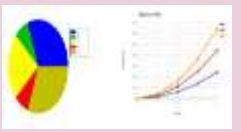
vation and Measurement	NC		Observing closely using simple equipment. Identifying and Classifying		Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, includng thermometers and data loggers		Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings where necessary	
	Observation KPIs	Explore the natural world making observations (e.g seasons) Explore different equipment and finding out what its uses are. Know similarities and differences between the natural world around them. Observe and describe what they see using everyday language.	Uses appropriate senses aided by equipment such as magnifying glasses and digital microscopes to make observations. With help and prompting, observe changes over time and can describe the changes. Can identify and group, compare and contrast using observations, video and photographs.	Observe closely, using simple equipment. Can identify a variety of plants and animals using observations. Observe how different plants grow and record findings including similar plants at different stages of growth and notice similarities and differences. Use their observations and ideas to suggest answers to questions. Observe through video, first-hand observations and measurement how different animals including humans grow and offer explanations. Compare objects based on observable features.	Make systematic and careful observations. Look for naturally occurring patterns and relationships. Collect data from their own observations and measurements. Closely observe stages of plant lifecycle over a period of time, noting patterns. Observe how water is transported in plants. Observe patterns in the way magnets behave in relation to each other. Can make observations and decide how to record them to answer a question.	Make systematic and careful observations to identify plants and animals in their habitats and how the habitat changes throughout the year. Use observations to ask questions and group objects using classification keys. Observe closely and describe processes such as changes of state. Observe and record evaporation over a period of time. Identify differences, similarities or changes related to simple scientific ideas or processes.	Observe and compare the life cycles of plants and animals in their local environment with other plants and animals around the world. Observe changes over a period of time. (e.g. animals) Make own decisions about what to observe.	Children answer their own and others' questions on observations they have made. Their answers are based on evidence. Observe and raise questions about animals and how they are adapted to their environment. Observe properties of materials to group and classify based on their characteristics and properties.

Observation	Measurement KPIs	Take measurements initially by comparisons then begin to use non-standard units. Make links and notice patterns in their experiences.	Use discrete e.g., counting and continuous data e.g. liquid to manageable common standard units. Can use simple measurements and equipment such as hand lenses and egg timers to gather data. Can use non-standard measures to compare.	Use standard units to estimate and measure length, height, temperature, and capacity. Can use rulers, scales, thermometers and measuring vessels with some degree of accuracy. Make decisions about what measurements to use and how long to make them for.	Take accurate measurements using standard units, can measure and compare. (e.g., amount of liquid and height of a plant to nearest ½ cm) Use a range of equipment for measuring time, length, capacity and temperature. Begin to use a range of scales. Can read digital measurements from data loggers appropriately.	Uses a range of scales. Takes and records accurate measurements using standard units. Can record measurements to 2dp. Use thermometers to explore the effects of temperature on substances. Use data loggers to record sound in decibels and notice patterns. Use volt metres to measure voltage in a circuit to observe patterns and answer questions. Begin to gather repeat readings to increase accuracy.	Take repeat measurements where appropriate. Can choose the middle value or finds mean average. Select measuring equipment to give most precise results e.g., ruler, tape measure, trundle wheels, force metres with suitable scales. Can explain advantages and disadvantages of different measuring equipment. Children make quantitative measurements about conductivity and insulation.	Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings where appropriate. When collecting measurements, the decide whether they need to increase sample size for validity and reliability. Can record measurements to 3dp. Can use protractors and rulers and force metres to measure accurately choosing correct units.
		EYFS	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Recording	NC		Gathering and recording data to help in answering questions. Identifying & Classifying		Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions. Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables		Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.	
	Charts & Graphs	Draw pictures of objects in their own environment. Can take photos of things of interest to them.	Begin to show accuracy in drawings and simple labels. Use key scientific vocabulary provided by the teacher.	The children record their observations e.g. using photographs, videos, drawings, labelled diagrams or in writing. Record findings using scientific language. Gather and record data to help in answering questions.	Record findings using scientifical language, drawings and labelled diagrams.	Record findings using systematic and careful observational drawings and labelled diagrams. Children supported to present the same data in different ways- choice over recording.	Children decide how to record data from a choice of familiar approaches. Present results in a variety of ways to help in answering questions.	Children present the same data in different ways to help answering the question. Record data and results with increasing complexity e.g accuracy of measurements, multiple data sets and different scales. Use scientific diagrams and labels.
	Sorting	Can count results. Start to mark make to record results.	Can complete a simple table of results. (Prepared) Can add marks to a chart to collect data.	Count results using a tally chart. Use prepared tables to record results.	Can complete a table (with given template) where they add headings and results.	Can create own tables with own headings. Can convert between units of measure.	Can produce own results table indicating cause and effect. Records results systematically.	They can calculate the mean and range of a set of data. Use multiple data sets.
	Tables	Can order items. Can sort in more than 2 groups using familiar categories.	Can using sorting rings to classify in more than 2 groups answering yes or no questions. Can sort using a simple 2 criteria Venn diagram.	Can identify and classify. Use simple keys based and yes or no questions. Can sort into 2 groups explaining their reasons clearly.	Can use simple classification keys and Venn diagram with 2 sorting criteria and 1 intersecting. Begin to use Carroll diagrams. Can give reasons for their sorting criteria.	Can record using classification keys. Can use Venn and Carroll diagrams for classification, choosing own criteria.	Use and develop classification keys and other information records to identify, classify and describe. Can classify in a number of ways.	Can use and produce classification keys independently by posing questions.
	Recording	Can create a class chart using pictures and objects. 	Can complete a prepared block graph/pictogram. 	Can record using prepared vertical bar charts. Can use results from tally charts. 	Can produce vertical and horizonal bar charts adding own labels and bars. 	Can use discrete and continuous data, presenting data in a line/scatter graph. Can construct a pictogram/bar chart ind… 	Use line or scatter graphs to calculate range in a set of data. (Different scales used) Can produce bar graphs with various increments. 	Can independently collect data and produce scatter and line graphs using various scales and multiple data. Can create bar charts and pie charts to present data. 
		EYFS	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
Interpreting and Conclusion	NC		Using their observations nd ideas to suggest answers to questions		Reporting on findings from enquiries, including oral and written explanations, displays, or presentations and raise further questions. Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. Identifying differences, similarities or changes related to simple scientific ideas and processes		Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and presentations. Identifying scientific evidence that has been used to support or refute ideas or arguements.	
	KPIs	Offer explanations for why things happen- making use of some recently introduced scientific vocabulary. Develop own narrative and explain by connecting ideas or events. Develop vocabulary which meets the breadth of their experiences	Can use evidence from simple tests when answering questions. With help begin to notice patterns and relationships. Talk about what they have found out and how they found it out. Can make comparisons and recognise biggest/smallest, most effective/least effective from data.	Communicate findings to an audience using relevant scientific language and illustrations. Can identify casual relationships and patterns in results. Can identify which results do not fit the overall pattern and explain findings. Refers to the table of results when describing what has happened. Draws a basic conclusion (with support from the teacher) using own scientific knowledge, observations and comparisons. Uses results of investigations to answer enquiry questions.	Begin to look for naturally occurring patterns and relationships from data. Draws conclusions based on observations. Can compare something using results and the conclusion is consistent with the data. Able to adjust opinion and predictions based on results. Can give reasons for results including any anomalies. Uses findings and results to answer questions raised. Use simple scientific language to discuss ideas and communicate their findings in ways appropriate for different audiences orally and written. Apply their knowledge of the topic when evaluating. Explain any amendments and how this impacted the investigation/test.	Draws simple conclusions from results to answer questions and support their ideas. Look for casual relationships in data and identify evidence that refutes/supports ideas. Report on findings to an audience orally and in writing using appropriate scientific vocabulary for a range of audiences. Children use evidence to suggest values for different items tested using the same method. Draw conclusions based on straightforward evidence and current subject knowledge to support their findings, Suggest improvements and raise further questions.	Identify patterns and casual relationships that may be found in the natural environment. Children interpret data to generate simple comparative statements based on evidence. Use results to draw conclusions and can identify external factors that cannot be controlled e.g. temperature inside and outside. Use scientific language and illustrations to discuss, communicate and justify scientific ideas. Use results to make predictions and identify whether further observations, comparative tests, fair tests, pattern seeking, or research might be needed. Can use comparative statements to explain results and how things work. Evaluates how effectively variables were controlled.	Look for patterns and relationships using a suitable sample. Use oral and written forms such as displays to report conclusions, casual relationships and give an explanation of the degree of trust in their results. Children can pose further questions which can be answered by extending the enquiry. Makes suggestions for ideas that can be explored using pattern seeking. Can spot anomalies and identify results that do not fit the overall pattern. Use data to refute or support ideas or arguments. Focuses on scientific reasons for overall pattern rather than a comparison. Uses labelled diagrams to support their explanation. Use ideas from secondary sources to support their ideas, choosing appropriate websites.
		EYFS	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**
	NC		Using their observations and ideas to suggest answers to questions.		Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. Using straightforward evidence to answer questions or to support their findings.		Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and presentations. Identifying scientific evidence that has been used to support or refute ideas or arguements.	

Evaluating	KPIs	Develop own narrative and explanations by connecting ideas or events. Talk about what I have found and say what worked well. Describe how things work in simple terms and make basic alterations and suggest things that did not work (e.g. this button does not work so press this one) Questions why things happen. Children will come up with alternative ways of doing this through exploration. Children can say or indicate by smiley faces/scale if they have achieved the learning objective.	With scaffolding and prompting can suggest improvements to their enquiries. Talk about some changes that could be made. Use simple success ladders to evaluate their tests or understanding against the learning objective.	With support can suggest improvements to their enquiries. Suggest some things that could be changed and evaluate why things went wrong. Use success ladders with multiple criteria to evaluate the test or their understanding against the learning objective.	Suggest improvements and raises further questions Uses evidence and subject knowledge to refute statements. Make suggest improvements from enquiries. Make basic statements about what worked well and what they would change. Use success ladders confidently to evaluate their tests or understanding against multiple criteria and suggest simple next steps.	Evaluate and communicate their methods and findings. Suggest ways to improve what they have already done. Begin to evaluate different aspects of their enquiries such as equipment. Begin to understand how the enquiry improves outcomes from their questions. Use different charts to evaluate such as ranking scales, star diagrams and success ladders. Suggest points for development based on the weakest aspects.	Evaluate and decide when further observations, comparative and fair tests might be needed. Evaluate different aspects of their enquiries such as equipment and accuracy of measurements. State how the enquiry improves outcomes from their questions. Children can relate their results to the question and state if their test has enabled them to answer it. Use a range of charts to evaluate such as ranking scales, star diagrams including those with negative numbers. Suggest next steps based on the weakest aspects and state how this will help them or the test progress or give different results.	Children can describe and evaluate their own and other people's scientific ideas using evidence from a range of sources. Evaluate their choice of method, the control of variables, the precision and accuracy of measurements and the credibility of secondary sources. Children use scientific language and evaluates how their enquiry has answered the question.