Working Scientifically Skills Progression for Science

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Skills	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Asking questions and Making predictions	**Statutory ELG: The Natural World** Children at the expected level of development will: - Explore the natural world around them, making observations and drawing pictures of animals and plants; - Know some similarities and differences between the natural world around them and contrasting environments, been read in class; - Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.	With help, make a simple prediction or suggestion about what might happen. With help, carry out a simple test / comparative test. Begin to suggest some ideas e.g. choose which equipment to use, choose which materials to test from a selection. Talk about ways of setting up a test.	Make a simple prediction about what might happen and try to give a vague reason (even though it might not be correct). Carry out simple comparative tests as part of a group, following a method with some independence. With support, make suggestions on a method for setting up a simple comparative test. Talk about a practical way to find answers to their questions.	Help to decide about how to set up a simple fair test and begin to recognise when a test is not fair. Make a prediction based on everyday experience. With support / as a group, set up simple practical enquiries including comparative and fair tests e.g. make a choice from a list of a things (variables) to change when conducting a fair test. (e.g. choose which magnets to compare and which method to use to test their strength). As a group, begin to make some decisions about the best way of answering their questions. Find / suggest a practical way to compare things e.g. rocks.	Carry out simple fair tests with increasing confidence, investigating the effect of something on something else. Start to make their own decisions about the most appropriate type of science enquiry they might use to answer scientific questions (is a fair test the best way to investigate their question?) Make a prediction based on the knowledge acquired from previous explorations / observations and apply it to a new situation. Explain their planning decisions and choices. Make some of the planning decisions about what to change and measure / observe. Begin to recognise when a fair test is necessary.	Carry our fair tests and other investigations with increasing independence. Suggest more than one possible prediction and begin to suggest which is the most likely. Justify their reason with some knowledge and understanding of the scientific concept. Make decisions about which variables to change, measure and keep the same. Make most of the planning decisions for an investigation. Recognise when it is appropriate to carry out a fair test.	Make a hypothesis where they say how one thing will affect another and give a reason for their suggestion with a developing understanding of the scientific concept. Predict what a graph might look like before collecting results. Identify variables to change, measure and keep the same in order for a test to be fair. Independently plan investigations and explain planning decisions. Decide when it is appropriate to carry out a fair test investigation, comparative test or alternative.

Setting up tests And Observing & Measuring	**Statutory ELG: The Natural World** Children at the expected level of development will: - Explore the natural world around them, making observations and drawing pictures of animals and plants; - Know some similarities and differences between the natural world around them and contrasting environments, been read in class; - Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.	Perform simple tests (Year 1 focus) e.g. Which materials keep things warmest? Know whether the test has been successful and can say what has been learned	Perform simple comparative and fair tests (Yr 2 focus) e.g. Finding out how seeds grow best	Set up simple practical enquiries, comparative and fair tests e.g. - To see which type of soil is most suitable when growing two similar plants? -To see if their right hand is as efficient as their left. -Set up a fair test with different variables e.g. the best conditions for a plant to grow. -Can explain to a partner why a test is a fair one.	Set up simple practical enquiries, comparative and fair tests e.g. -Which of two instruments make the highest or lowest sound and does a glass of ice weigh more than a glass of water. -Set up a fair test with more than one variable e.g. using different materials to cut out sound. -Can explain to others why a test is fair e.g. discover how fast ice melts in different temps.	Set up an investigation when it is appropriate e.g. finding out which materials dissolve or not. Set up a fair test when needed e.g. - Which surfaces create most friction? Set up an enquiry based investigation e.g. - Find out what adults/ children can do now that they couldn't do when they were a baby. -Know what variables are in a given enquiry and can isolate each one when investigating. e.g. Finding out how effective parachutes are when made with different materials.	Know which type of investigation is needed to suit a particular scientific enquiry e.g. Looking at the relationship between pulse and exercise. -Set up a fair test when needed e.g. Does light travel in straight lines? -Know how to set up an enquiry based investigation e.g. What is the relationship between oxygen and blood?
Interpreting and communicating results	**Statutory ELG: Speaking** Children at the expected level of development will: - Participate in small group, class and one-to-one discussions, offering their own ideas, using recently introduced vocabulary; - Offer explanations for why things might happen, making	Ask simple questions and recognise that they can be answered in different ways e.g. Why are flowers different colours? -Why do some animals eat meat and others do not?	Ask simple questions and recognise that they can be answered in different ways including use of scientific language from the national curriculum e.g. Why do some trees lose their leaves in autumn and others do not? - How long are the roots of tall trees?	Ask relevant questions and use different types of scientific enquiries to answer them e.g. Why does the moon appear as different shapes in the night sky? -Why do shadows change during the day? -Where does a fossil come from?	Ask relevant questions and use different types of scientific enquiries to answer them e.g. Why are steam and ice the same thing? - Why is the liver important in the digestive system? -What do we mean by pitch when it comes to sound?	Plan different types of scientific enquires to answer given questions	Plan different types of scientific enquiries to answer their own or others' questions.

	use of recently introduced vocabulary from stories, non-fiction, rhymes and poems when appropriate; - Express their ideas and feelings about their experiences using full sentences, including use of past, present and future tenses		-Why do some animals have underground habitats?				
Recording data	ELG: Writing ELG: Speaking ELG:Mathematics Statutory Educational Programme: Mathematics In addition, it is important that the curriculum includes rich opportunities for children to develop their spatial reasoning skills across all areas of mathematics including shape, space and measures. It is important that children develop positive attitudes and interests in mathematics, look for patterns and relationships, spot connections, 'have a go', talk to adults and peers about what they notice and not be afraid to make mistakes.	Communicate their ideas to a range of audiences in a variety of ways. Complete a preconstructed table / chart using picture records or simple words. Contribute to a class display. Add annotations to drawings or photographs.	Record and communicate their findings in a range of ways to a variety of audiences. Use simple scientific language with increasing accuracy. Record simple data with some accuracy to help in answering questions; With support or using frameworks, make decisions about how to complete a variety of tables/charts (e.g. a 2 column table, tally charts, Venn diagram, pictograms, block	Record and present findings using simple scientific language and vocabulary, including discussions, oral and written explanations, notes, annotated drawings, pictorial representations, labelled diagrams, simple tables, bar charts (using scales chosen for them), displays or presentations. With scaffold / support record, and present data in a variety of ways to help in answering questions.	Record findings using relevant scientific language and vocabulary including discussions, oral and written explanations, notes, drawings (annotated), pictorial representations, labelled diagrams, tables and bar charts [where intervals and ranges agreed through discussion], displays or presentations. Begin to select the most useful ways to collect, record, classify and present data from a range of choices.	Use their developing scientific knowledge and understanding to communicate more abstract concepts Present and explain their findings through talk, in written forms or in other ways (e.g. using technology) for a range of audiences / purposes. Record data and results of increasing complexity using different formats e.g. tables, annotated scientific diagrams, classification keys, graphs and models. Make decisions about the most appropriate way of recording data.	Articulate understanding of the concept using scientific language and terminology when describing abstract ideas, observations and findings. Record data and results of increasing complexity using scientific diagrams and labels, recognised symbols, classification keys, tables, bar and line graphs, and models. Make decisions about how to present and explain their findings through talk, in written forms or in other ways (e.g. using technology).

Classifying	**Statutory ELG: The Natural World** Children at the expected level of development will: - Explore the natural world around them, making observations and drawing pictures of animals and plants; - Know some similarities and differences between the natural world around them and contrasting environments, been read in class; - Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.	**Name / identify** common examples and some common features. With help, decide how to sort and **group** objects, materials or living things. Name basic features of objects, materials and living things. Say how things are similar or different. **Compare** and contrast simple observable features / characteristics of objects, materials and living things.	**Name / identify** common examples, some common features or different uses. **Sort and group** objects, materials or living things by observable and/or behavioural features. **Compare** and contrast… a variety of things [objects, materials or living things] - focusing on the similarities as well as the differences.	Decide ways and give reasons for sorting, grouping, classifying, identifying things / objects, living things, processes or events based on specific characteristics. Compare, contrast, and begin to consider the relationships between different things.	Make a simple guide to local living things. Use guides or simple keys to classify / identify [animals, flowering plants and nonflowering plants]. Use their observations to identify and classify. Begin to give reasons for these similarities and differences. Record similarities as well as differences and / or changes related to simple scientific ideas or processes or more complex groups of objects / living things / events (e.g. evaporation and condensation, different food chains, different electrical circuits).	Suggest reasons for similarities and differences. Compare and contrast things beyond their locality and use these similarities and differences to help to classify.	Recognise the importance of classification to the scientific world and form a conclusion from their sorting and classifying. Compare and contrast more complex processes, systems, functions (e.g. sexual and asexual reproduction).Construct a classification key / branching database using more than two items. Compare and contrast things beyond their locality and discuss advantages / disadvantages, pros / cons of the similarities and differences. Use research* to identify and classify things. Use classification systems, keys and other information records [databases] to help classify or identify things.
Enquiring	**Statutory ELG: Speaking** Children at the expected level of development will: - Participate in small group, class and one-to-one discussions, offering their own ideas, using	Ask people questions (e.g. an expert or hot seating). Use simple primary and secondary sources (such as objects, books and photographs) to find things out.	Talk about how useful the information source was and express opinion about findings. Make suggestions about who to ask or where to look for information. Ask people questions to help them	Find things out using a range of secondary sources of information (e.g. books, photographs, videos and other technology).	Make decisions about which information to use from a wide range of sources and make decisions about how to present their research. Recognise when and how secondary	Find out how scientific ideas have changed / developed over time. Articulate and explain findings from their research using scientific knowledge and	Research how scientific ideas have developed over time and had an impact on our lives. Use evidence from a variety of sources to justify their ideas Recognise which

	recently introduced vocabulary; - Offer explanations for why things might happen, making use of recently introduced vocabulary from stories, non-fiction, rhymes and poems when appropriate; - Express their ideas and feelings about their experiences using full sentences, including use of past, present and future tenses		answer their questions. Use simple and appropriate secondary sources (such as books, photographs, videos and other technology) to find things out / find answers.		sources might help them to answer questions that cannot be answered through practical investigations.	understanding. Make decisions about which information to use from a wide range of sources.	secondary sources will be most useful to research their ideas and begin to separate opinion from fact. Interview people to find out information