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| Science – Working Scientifically  |
| **Observing over time***Also part of testing* | EYFS | KS1 | LKS2 | UKS2 |
| **UtW ELG: The Natural World** Explore the natural world around them, making observations and drawing pictures of animals and plants.**PD ELG: Fine Motor Skills** Begin to show accuracy and care when drawing. | Explore the world around them. Make careful observations to support identification, comparison and noticing change. Use appropriate senses, aided by equipment such as magnifying glasses or digital microscopes, to make their observations.  | Make systematic and careful observations.  | Decide what observations or measurements to make over time and for how long |
| **Identifying, Classifying and Grouping** | **UtW ELG: The Natural World** Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class. | Describe the characteristics they used to identify a living thing. |  |  |
| Sort and group objects, materials and living things, identifying own criteria for sorting.  |  |  |
| Classify using simple prepared tables and sorting rings. | Record classifications e.g. using tables, Venn diagrams, Carroll diagrams.  | Record classifications e.g. using tables |
| **Comparative and Fair Testing** | Asking Questions | **C+L ELG: Listening, Attention and Understanding** Listen attentively and respond to what they hear with relevant questions, comments and actions when being read to and during whole class discussions and small group interactions | Develop an ability to ask questions while exploring the world (such as what something is, how things are similar and different, the ways things work, which alternative is better, how things change and how they happen). Where appropriate, answer these questions.  | Independently use a range of question stems. Where appropriate, answer own questions.Answer questions posed by the teacher.  | Independently ask scientific questions |
| Making Predictions | Use own experiences of the world around me to suggest appropriate answers to questions. | Consider prior knowledge when asking questions.  | Use the scientific knowledge gained from enquiry work to make predictions they can investigate using comparative and fair tests |
| Setting Up Tests |  | Be involved in planning how to use resources provided to answer questions using different types of enquiry, recognising that there are different ways in which questions can be answered. | Identify the type of enquiry that they have chosen is needed to answer a question. | Make decisions e.g. whether they need to: take repeat readings (fair testing) |
| Given a range of resources, decide how to gather evidence to answer a question.  | With given resources, gather evidence to answer a scientific question. |
| Observing and Measuring | ***UtW ELG: The Natural World*** *Explore the natural world around them, making observations and drawing pictures of animals and plants.* | *Make careful observations to support identification, comparison and noticing change.* *Use appropriate senses, aided by equipment such as magnifying glasses or digital microscopes, to make their observations.* | *Make systematic and careful observations.* | *Decide what observations or measurements to make over time and for how long* |
| **PD ELG: Fine Motor Skills** Use a range of small tools, including scissors, paint brushes and cutlery.  | Use practical resources provided to gather evidence to answer questions generated by myself or the teacher.  | Select from a range of practical resources to gather evidence to answer questions generated by myself or the teacher.  | Select from a range of practical resources to gather evidence to answer their questions. |
| Carry out: tests to classify; comparative tests; pattern seeking enquiries; and make observations over time. | Follow a plan to carry out: observations and tests to classify; comparative and simple fair tests; observations over time; and pattern seeking. | Carry out fair tests, recognising and controlling variables |
| Begin to take measurements, initially by comparisons, then using non-standard units. | Use a range of equipment for measuring length, time, temperature and capacity. Use standard units for measurements. | Select measuring equipment to give the most precise results e.g. ruler  |
| Recording Data |  |  | Decide (sometimes) how to record and present evidence.  | Decide how to record and present evidence |
| Record observations e.g. using photographs, videos, drawings, labelled diagrams or in writing. | Record observation e.g. using photographs, videos, pictures, labelled diagrams or writing. | Record observations e.g. using annotated photographs |
| Record measurements e.g. using prepared tables, pictograms, tally charts and block graphs. | Record their measurements e.g. using tables, tally charts and bar charts (given templates, if required, to which can add headings).  | Record measurements e.g. using tables |
| Interpreting and Communicating Results*Also in pattern seeking* | **ELG Speaking**Offer explanations for why things might happen, making use of recently introduced vocabulary from stories, non-fiction, rhymes and poems when appropriate. | *The children recognise ‘biggest and smallest’, ‘best and worst’ etc. from their data.* | *Interpret their data to generate simple comparative statements based on their evidence.*  | *Look for patterns and relationships using a suitable sample* |
|  | Present the same data in different ways (with support) in order to help with answering the question. | Present the same data in different ways in order to help with answering the question |
|  | Communicate their findings to an audience both orally and in writing, using appropriate scientific vocabulary | Communicate findings to an audience using relevant scientific language and illustrations |
| Answer questions developed with the teacher, often through a scenario.With support, relate my experiences of the world around me to evidence e.g. observations they have made or measurements they have taken. | Answer their own and others’ questions based on observations they have made or measurements they have taken. The answers are consistent with the evidence. | Answer their own and others’ questions based on observations they have made or measurements. |
| Evaluating |  |  |  | Evaluate, for example, the choice of method used |
| Identify any limitations that reduce the trust they have in their data  |
| Draw conclusions based on evidence and current subject knowledge.  | In conclusions: identify causal relationships and patterns in the natural world from their evidence; identify results that do not fit the overall pattern; and explain their findings using their subject knowledge. |
| Identify ways in which they adapted their method as they progressed or how they would do it differently if they repeated the enquiry.  | Discuss whether other evidence e.g. from other groups supports or refutes their answer |
| Use their evidence to suggest values for different items tested using the same method e.g. the distance travelled by a car on an additional surface.  |  |
| Following a scientific experience, ask further questions which can be answered by extending the same enquiry | Talk about how their scientific ideas change due to new evidence that they have gathered |
| **Pattern Seeking** | **UtW ELG: The Natural World** Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class. | Use observations and testing to compare objects, materials and living things.The children recognise ‘biggest and smallest’, ‘best and worst’ etc. from their data. | Begin to identify naturally occurring patterns and causal relationships.Interpret their data to generate simple comparative statements based on their evidence. | Look for patterns and relationships using a suitable sample |
| **Research using Secondary Sources** |  | With support, relate my experiences of the world around me to evidence e.g. information they have gained from secondary sources. Use simple secondary sources (such as identification sheets) to name living things.  | Answer their own and others’ questions based information they have gained from secondary sources. The answers are consistent with the evidence.Recognise when secondary sources can be used to answer questions that cannot be answered through practical work.  | Answer their own and others’ questions based on information they have gained from secondary sources. The answers are consistent with the evidence.Talk about how new discoveries change scientific understanding. |

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| Science - Biology |
| Animals, including Humans | EYFS | KS1 | LKS2 | UKS2 |
| **ELG Managing Self**Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices. | Know how to classify a range of animals by amphibian, reptile, mammal, fish and birdsKnow and classify animals by what they eat (carnivore, herbivore and omnivore)Know how to sort by living and non living things5Know the name of parts of the human body that can be seenKnow the basic stages in a life cycle for animals, (including humans)Know why exercise, a balanced diet and good hygiene are important for humans | Know about the importance of a nutritious, balanced dietKnow how nutrients, water and oxygen are transported within animals and humansKnow about the skeletal and muscular system of a humanIdentify and name the parts of the human digestive systemKnow the functions of the organs in the human digestive systemIdentify and know the different types of human teethKnow the functions of different human teethUse and construct food chains to identify producers, predators and prey | Create a timeline to indicate stages of growth in humansIdentify and name the main parts of the human circulatory systemKnow the function of the heart, blood vessels and bloodKnow the impact of diet, exercise, drugs and lifestyle on healthKnow the ways in which nutrients and water are transported in animals, including humans |
| All Living things and their habitats |  | Classify things by living, dead or never livedKnow how a specific habitat provides for the basic needs of things living there (plants and animals)Match living things to their habitatName some different sources of food for animalsKnow about and explain a simple food chain | Use classification keys to group, identify and name living thingsKnow how changes to an environment could endanger living thingsGroup materials based on their state of matter (solid, liquid or gas) | Know the life cycle of different living things e.g. mammal, amphibian, insect and birdKnow the differences between different life cyclesKnow the process of reproduction in plantsKnow the process of reproduction in animalsClassify living things into broad groups according to observable characteristics and based on similarities and differencesKnow how living things have been classifiedGive reasons for classifying plants and animals in a specific way |
| Plants | **ELG The Natural World**Explore the natural world around them, making observations and drawing pictures of animals and plants. | Know and name a variety of common wild and garden plantsKnow and name the petals, stem, leaves and root of a plantKnow and name the roots, trunk, branches and leaves of a treeKnow and explain how seeds and bulbs grow into plantsKnow what plants need in order to grow and stay healthy (water, light & suitable temperature) | Know the function of different parts of flowing plants and treesKnow how water is transported within plantsKnow the plant life cycle, especially the importance of flowers |  |
| Evolution and Inheritance |  |  |  | Know how the Earth and living things have changed over timeKnow how fossils can be used to find out about the pastKnow about reproduction and offspring (recognising that offspring normally vary and are not identical to their parents)Know how animals and plants are adapted to suit their environmentLink adaptation over time to evolutionKnow about evolution and can explain what it is |

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| Science - Chemistry |
| Materials | EYFS | KS1 | LKS2 | UKS2 |
| **ELG Creating with Materials**Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. | Know the name of the materials an object is made fromKnow about the properties of everyday materialsKnow how materials can be changed by squashing, bending, twisting and stretchingKnow why a material might or might not be used for a specific job  |  | Compare and group materials based on their properties (e.g. hardness, solubility, transparency, conductivity, [electrical & thermal], and response to magnetsKnow and explain how a material dissolves to form a solutionKnow and show how to recover a substance from a solutionKnow and demonstrate how some materials can be separated (e.g. through filtering, sieving and evaporating)Know and demonstrate that some changes are reversible and some are notKnow how some changes result in the formation of a new material and that this is usually irreversible |
| Rocks |  |  | Compare and group rocks based on their appearance and physical properties, giving reasonsKnow how soil is made and how fossils are formedKnow about and explain the difference between sedimentary, metamorphic and igneous rock |  |
| States of Matter | **ELG The Natural World**Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter. |  | Know the temperature at which materials change stateKnow about and explore how some materials can change stateKnow the part played by evaporation and condensation in the water cycle  |  |

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| Science - Physics |
| Earth and Space | EYFS | KS1 | LKS2 | UKS2 |
| **ELG The Natural World**Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter. | Name the seasons and know about the type of weather in each season |  | Know about and explain the movement of the Earth and other planets relative to the SunKnow about and explain the movement of the Moon relative to the EarthKnow and demonstrate how night and day are createdDescribe the Sun, Earth and Moon (using the term spherical) |
| Forces |  |  | Know about and describe how objects move on different surfacesKnow how a simple pulley works and use to on to lift an objectKnow how some forces require contact and some do not, giving examplesKnow about and explain how magnets attract and repel Predict whether magnets will attract or repel and give a reason | Know what gravity is and its impact on our livesIdentify and know the effect of air and water resistanceIdentify and know the effect of frictionExplain how levers, pulleys and gears allow a smaller force to have a greater effect |
| Light |  |  | Know that dark is the absence of lightKnow that light is needed in order to see and is reflected from a surfaceKnow and demonstrate how a shadow is formed and explain how a shadow changes shapeKnow about the danger of direct sunlight and describe how to keep protected  | Know how light travelsKnow and demonstrate how we see objectsKnow why shadows have the same shape as the object that casts themKnow how simple optical instruments work e.g. periscope, telescope, binoculars, mirror, magnifying glass etc. |
| Electricity |  |  | Identify and name appliances that require electricity to functionConstruct a series circuitIdentify and name the components in a series circuit (including cells, wires, bulbs, switches and buzzers)Predict and test whether a lamp will light within a circuitKnow the function of a switchKnow the difference between a conductor and an insulator; giving examples of each | Compare and give reasons for why components work and do not work in a circuitDraw circuit diagrams using correct symbolsKnow how the number and voltage of cells in a circuit links to the brightness of a lamp or the volume of a buzzer |
| Sound |  |  | Know how sound is made, associating some of them with vibratingKnow how sound travels from a source to our earsKnow the correlation between pitch and the object producing a soundKnow the correlation between the volume of a sound and the strength of the vibrations that produced itKnow what happens to a sound as it travels away from its source |  |