

|  |
| --- |
| **Progression of Skills in: Working Scientifically** |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Skills** | **EYFS (D.M/ELG’s)** | **Year 1** | **Year 2** | **Year 3** | **Year 4** | **Year 5** | **Year 6** | **Beyond KS2** |
| **PLAN** | **>Comment and ask questions about aspects of their familiar world such as the natural world.**  | >**Ask simple questions and recognise that they can be answered in different ways** | **> Ask relevant questions and use different types of scientific enquiries to answer them** >Set up simple practical enquiries, comparative and fair tests | >**Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary** >Use test results to make predictions to set up further comparative and fair tests  | >**Ask questions and develop a line of enquiry based on observations of the real world alongside prior knowledge and experience**>Make predictions using scientific knowledge and understanding  |
| **DO** | **>Talk about similarities and differences in relation to places, objects, materials and living things.**>They make observations of animals and plants  | >**Observe closely, using simple equipment**>Perform simple tests**> Identify and classify** | >**Make systematic and careful observations and , where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers** | **>Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate** | **>Select, plan and carry out the most appropriate types of scientific enquiries to test predictions…** |
| **RECORD** | **>Create simple representations of observations**  | >**Gather and record data to help in answering questions**(Mathematics POS)**By the end of KS1 pupils should be able to interpret and construct simple pictograms, tally charts, block diagrams and simple tables** | >**Gather, record, classify and present data in a variety of ways to help in answering questions**>Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables(Mathematics POS)**By the end of Year 4 pupils should be able to interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs** | **>Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs,** (Mathematics POS)**By the end of Year 6 pupils should be able to interpret and construct pie charts and line graphs and use these to solve problems calculate and interpret the mean as an average**. | **>Make and record observations and measurements using a range of methods for different investigations; and evaluate the reliability of methods and suggest possible improvements**>Present observations and data using appropriate methods, including tables and graphs  |
| **EVALUATE** | >**They talk about the features of their own immediate environment and how environments might vary from one another.**>They explain why some things occur, and talk about changes. | >Use their observations and ideas to suggest answers to questions | **>Report on findings from enquiries, include oral and written explanations, displays or presentations of results and conclusions**>Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions >**Identify differences, similarities or changes related to simple scientific ideas and processes**>Use straightforward scientific evidence to answer questions or to support their findings.  | >**Report and present findings from enquiries, including conclusions, causal relationships and explanations results, explanations of and degree of trust in results, in oral and written forms such as displays and other presentations** **>**Identify scientific evidence that has been used to support or refute ideas or arguments.   | >**Interpret observations and data, including identifying patterns and using observations, measurements and data to draw conclusions****present reasoned explanations, including data in relation to predictions and hypotheses**>Evaluate data, showing awareness of potential sources of error>**Identify further questions arising from results** |



|  |
| --- |
| **Progression of Scientific Knowledge in: Animals Including Humans** |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **EYFS (D.M/ELG)** | **Year 1** | **Year 2** | **Year 3** | **Year 4** | **Year 5** | **Year 6** |
| **Autumn -How Do I grow and Change?****Spring -How Can I be Healthy?****Summer -How do animals and plants change over time?****ELG 8 HSC****Reception children should be taught to:**>observe the effects of exercise on their body**>understand the need for variety in food**>Show some understanding that good practises with regard to exercise, eating, sleeping and hygiene can contribute to good health. **>talk about ways to keep healthy and safe****ELG 13 P&C**>talk about some of the things that make them unique >**describe similarities and differences between themselves and others**  **ELG 14 TW**>They make observations of animals they have seen, looking at similarities and differences. **> develop an understanding of growth and decay over time, talking about how animals including humans change over time.**  | **Year 1 - Pupils should be taught to:** >identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals >**identify and name a variety of common animals that are carnivores, herbivores and omnivores** >describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals including pets)>**identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense** | **Year 2 - Pupils should be taught to:** >notice that animals, including humans, have offspring which grow into adults >**find out about and describe the basic needs of animals, including humans, for survival (water, food and air)** >describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. | **Year 3 - Pupils should be taught to:** >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 >**identify that humans and some other animals have skeletons and muscles for support, protection and movement.** | **Year 4 - Pupils should be taught to:** >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. | **Year 5 - Pupils should be taught to:** >describe the changes as humans develop to old age. | **Year 6 - Pupils should be taught to:** >identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood **>recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function** >describe the ways in which nutrients and water are transported within animals, including humans. |



|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **EYFS (D.M / ELG)** | **Year 1** | **Year 2** | **Year 3** | **Year 4** | **Year 5** | **Year 6** |
| **Summer -How do animals and plants change over time?** **Summer 1: Minibeasts** **Summer 2: Plants** **ELG 14 TW**>Comment and ask questions about the natural world.>Can talk about some of the things they have observed such as plants, animals, natural and found objects>Develop and understanding of growth and decay>Shows care and concern fro living things >Talk about the features of their own immediate environment and how environments may vary from one to another |  | **Year 2 - Pupils should be taught to:** >explore and compare the differences between things that are living, dead, and things that have never been alive **>identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other** >identify and name a variety of plants and animals in their habitats, including micro-habitats **>describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food.** |  | **Year 4 - Pupils should be taught to:** >recognise that living things can be grouped in a variety of ways **>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. | **Year 5 - Pupils should be taught to:** >describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird **>describe the life process of reproduction in some plants and animals.** | **Year 6 - Pupils should be taught to:** >describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals >**give reasons for classifying plants and animals based on specific characteristics** |

|  |
| --- |
| **Progression of Scientific Knowledge in: Living Things and Habitats** |



|  |
| --- |
| **Progression of Scientific Knowledge in: Materials** |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **EYFS (D.M/ELG)** | **Year 1** | **Year 2** | **Year 3** | **Year 4** | **Year 5** | **Year 6** |
| ***Taught through cross curricular links with Exploring and Using media and materials / D&T /Art***ELG16>beginning to be interested in and describe the texture of things >experiments to create different textures >Understands that different media can be combined to create new effects >manipulates materials to achieve planned effect>selects appropriate resources, tools and techniques >experiment with colour design, texture, form and function. **TW -ELG 14 Exceeding statement**  They know the properties of some materials and can suggest some of the purposes they are used for.  | **Year 1 - Pupils should be taught to:** >distinguish between an object and the material from which it is made **>identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock** >describe the simple physical properties of a variety of everyday materials >**compare and group together a variety of everyday materials on the basis of their simple physical properties.** | **Year 2 - Pupils should be taught to:** >identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses >**find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.** | **Year 3 - Pupils should be taught to: >**compare and group together different kinds of rocks on the basis of their appearance and simple physical properties >**describe in simple terms how fossils are formed when things that have lived are trapped within rock** >recognise that soils are made from rocks and organic matter. | **Year 4 - Pupils should be taught to:** >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. | **Year 5 - Pupils should be taught to:** >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 **>know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution** >use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating >**give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic** >demonstrate that dissolving, mixing and changes of state are reversible changes >**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.** |  |

|  |
| --- |
| **Progression of Scientific Knowledge in: Evolution and Inheritance**  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **EYFS (D.M/ELG)** | **Year 1** | **Year 2** | **Year 3** | **Year 4** | **Year 5** | **Year 6** |
| **Autumn -How Do I grow and Change?****ELG 13 P&C**>talk about some of the things that make them unique >**describe similarities and differences between themselves and others**   |  | **Living Things and their habitats** >Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other.  | **Rocks and soils**>Describe in simple terms how fossils are formed when things that have lived are trapped within rock.  | **Living Things and their habitats** >Recognise that environments can change and that this can sometimes pose dangers to living things |  | **Year 6 - Pupils should be taught to:** >recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago>**recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents** >identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution. |

|  |
| --- |
| **Progression of Scientific Knowledge in: Sound** |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **EYFS (D.M/ELG)** | **Year 1** | **Year 2** | **Year 3** | **Year 4** | **Year 5** | **Year 6** |
| Cross Curricular - Music **ELG16 EMM –** **>Explores and learns how sounds can be changed** **>Explores different sounds of instruments**  |  |  |  | **Year 4 - Pupils should be taught to: >**identify how sounds are made, associating some of them with something vibrating **>recognise that vibrations from sounds travel through a medium to the ear** >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.  |  |  |



|  |
| --- |
| **Progression of Scientific Knowledge in: Electricity** |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **EYFS** | **Year 1** | **Year 2** | **Year 3** | **Year 4** | **Year 5** | **Year 6** |
|  |  |  |  | **Year 4 - Pupils should be taught to:** >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.  |  | **Year 6 - Pupils should be taught to:** >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. |



|  |
| --- |
| **Progression of Scientific Knowledge in: Light / Earth & Space** |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **EYFS** | **Year 1** | **Year 2** | **Year 3** | **Year 4** | **Year 5** | **Year 6** |
|  |  |  | >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 a solid object** >find patterns in the way that the size of shadows change. |  | **Year 5 - Pupils should be taught to:** >describe the movement of the Earth, and other planets, relative to the Sun in the solar system >**describe the movement of the Moon relative to the Earth** >describe the Sun, Earth and Moon as approximately spherical bodies **>use the idea of the Earth’s rotation to explain day and night and the apparent movement of the sun across the sky.**  | >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.** |

\*Links between Light and Earth & Space units

\*Possible links may also be made between Earth and Space and KS1 Unit – Seasonal Changes



|  |
| --- |
| **Progression of Scientific Knowledge in: Seasonal Changes** |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **EYFS (D.M/ELG)** | **Year 1** | **Year 2** | **Year 3** | **Year 4** | **Year 5** | **Year 6** |
| **Topic Link** **Autumn –What Can I see in Autumn and winter?****Spring –What can I see in Spring?****Summer –What can I see in Summer?****ELG 14 TW**>Comment and ask questions about the natural world.>Can talk about some of the things they have observed such as plants, animals, natural and found objects>Talks about why things happen and how things work>Develop and understanding of growth and decay>Talk about the features of their own immediate environment and how environments may vary from one to another>They make observations of animals and plants (linked to seasonal change) and explain why some things occur, and talk about changes.  | **Year 1 - Pupils should be taught to:** >observe changes across the four seasons >observe and describe weather associated with the seasons and how day length varies. |  | **Year 3 -Pupils should be taught to:**>Recognise that light from the sun can be dangerous and that there are ways to protect their eyes. **(Light)** |  | **Year 5 – Pupils should be taught to:**> Use the idea of the Earth’s rotation to explain day and night and the apparent movement of the Sun across the sky. **(Y5 - Earth and space)**  |  |

**Possible links – Plants (Y1,2,3) Living Things and habitats (Y2,4,5,6) Light (Y3,6) Earth and Space(Y5)**



|  |
| --- |
| **Progression of Scientific Knowledge in: Plants** |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **EYFS (D.M/ELG)** | **Year 1** | **Year 2** | **Year 3** | **Year 4** | **Year 5** | **Year 6** |
| **Summer -How do animals and plants change over time?** **Summer 2: Plants** Seasons - Termly**ELG 14 TW**>Comment and ask questions about the natural world.>Can talk about some of the things they have observed such as plants>Develop and understanding of growth and decay>Shows care and concern fro living things >Talk about the features of their own immediate environment and how environments may vary from one to another>Looks closely at similarities and differences>They make observations of plants and explain why some things occur, and talk about changes. .  | **Year 1 - Pupils should be taught to: >**identify and name a variety of common wild and garden plants, including deciduous and evergreen trees **>identify and describe the basic structure of a variety of common flowering plants, including trees.** | **Year 2 - Pupils should be taught to:** >observe and describe how seeds and bulbs grow into mature plants **>find out and describe how plants need water, light and a suitable temperature to grow and stay healthy** | **Year 3 - Pupils should be taught to:** >identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers **>explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) 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.** | **Year 4 - Pupils should be taught to:**  | **Year 5 - Pupils should be taught to:**  | **Year 6 - Pupils should be taught to:**  |



|  |
| --- |
| **Progression of Scientific Knowledge in: Forces** |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **EYFS (D.M/ELG)** | **Year 1** | **Year 2** | **Year 3** | **Year 4** | **Year 5** | **Year 6** |
| **ELG 14 TW**>Comment and ask questions about the natural world.>Can talk about some of the things they have observed >Talks about why things happen and how things work. **TW -ELG 14 Exceeding statement**  They are familiar with basic scientific concepts such as floating, sinking and experimentation.**(Taught through cross curricular links including numeracy – SSM-weight)**  |  |  | **Year 3 - Pupils should be taught to:** >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. |  | **Year 5 - Pupils should be taught to:** >explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object **>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. |  |