Hutton Rudby Primary School – Progression in Science

Factual Knowledge – NC LOs Substantive knowledge	Working Scientifically – NC LOs Disciplinary knowledge	Scientific Enquiry Procedural	Plymouth Science Scheme EYFS statements – linked to ELG

Knowledge Progression	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Animals including humans	Explore the world around them, making observations and drawing pictures of themselves and others. Know similarities and differences between the natural world around them. Work and play cooperatively and take turns with others. ELG: Manage their own basic hygiene and personal needs, including dressing, going to the toilet and understanding the importance of healthy food choices. ELG: Talk about the lives of the people around them and their roles in society. Identify parts of the body Look for patterns Identify Senses. I know why we must brush our teeth. I understand the roles of people who help us. I can look for similarities and differences in people's appearance when describing. I can identify patterns and prints. Observe parts of the body Explain ideas clearly. Record learning in a table. I can explain why it is important to clean our teeth. I can ask questions about why firefighters need to stay fit and healthy. I can make basic predictions.	I can identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals. I can identify and name a variety of common animals that are carnivores, herbivores and omnivores. I can describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals including pets) I can identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. Identify parts of body. Spot patterns between groups of animals. Identify and classify animals. Comparative tests. Ask questions. Venn diagrams Make comparisons and give reasons. Observe features of the human body. Carry out tests to compare and classify. Make predictions using senses.	I notice that animals including humans have offspring which grow into adults. I can find out about and describe the basic needs of animals including humans for survival. Describe the importance for humans of exercise, eating the right amounts of different types of food and hygiene Look for patterns in animals Observe lifecycle over time Research facts about animals identify and classify foods set up comparable tests Look for patterns in how germs spread use research Revise, research and recall Observe over time Identify animals and offspring Ask simple questions Communicate findings about animals Sort food into groups and record Use art to represent for groups Make simple predictions Communicate using models Answer questions using scientific knowledge Valuate tests	I can identify that humans and some other animals have skeletons and muscles for support, protection and movement. I can 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. Research the bones in the skeletal system. I can identify and classify parts of the skeletal system. Identify bones in the body and the hand. I can look for patterns in how each part of the hand moves and make adjustments. I can identify and classify animals into vertebrate and invertebrates. I can look for patterns in results. I can use secondary sources to find out about muscles. I can research the nutritional values of foods by reading data. I can look for patterns and compare nutritional values. I can identify and classify foods. Locate and label the bones in the body I can answer questions about the uses of our bones. Record using labelled drawings and scientific language. I can evaluate my design and suggest improvements. I can make careful observations to sort animals into groups. I can make predictions from questions raised. I can use scientific language to discuss ideas. I can record my results in a table. I can record my results in a bar chart. I can evaluate my learning using scientific language.	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. Identify the organs of the digestive system and use model to explain thinking. Identify the different teeth and know Their function. Identify and compare similarities and Differences in human and animal teeth. Set up a comparative test to show effects of tooth decay. Observe tooth decay over time. I can research animal food chains to Find out what animals eat. Identify foods animals eat to classify. Identify patterns Observe the similarities and differences in human/animal teeth. Interpret and present learning of digestive system through models. Set up own test to see the effects of different liquids on tooth decay. Make predictions based on scientific knowledge of liquids to decay teeth. I can record my results in a table and bar graph. I can ask questions to find out what animals eat Evaluate learning	Describe the changes as humans develop from birth to old age. Look for patterns in gestation periods. Notice changes over time Use research and own subject knowledge to order stages of human development. Identify changes in the human body I can research and use subject knowledge to help others. I can research and use subject knowledge to help others. Make predictions on gestation Periods. Record data using scatter graphs Make careful observations as we grow older Record learning using scientific diagrams. Interpret findings to help others. Evaluate my learning	I can identify the main parts of the human circulatory system and describe the function of the heart, blood vessels and blood. I can describe the ways in which nutrients and water and transported within animals including humans. I can recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function. Identify parts of the body Research Santorio and look for patterns. Identify parts of the blood. Use research to support explanation Conduct comparative test Use research to support ideas. Use scientific diagrams Take accurate measurements Use labelled diagrams to explain Use models to explain my thinking Plan investigation and record results. Observe what happens using a model.

Living Things and Habitats	I can explore the world around me, making observations of colour. I can participate in discussions and offer my own ideas using scientific words. I understand some important processes and changes in the world, including colour and how they change by mixing. I can understand the similarities and differences of animals in this country and in other countries. I can recognise some environments that are different to the one in which they live. I can understand the effect of changing seasons on the natural world. I can engage in non-fiction books. I can revise and refine my fundamental movement skills. Identify shapes and features of a spider. Look for simple patterns. Observe over time Comparative test Identify where animals may live in the world. I can look for patterns between the animal and its environment. I can observe what happens to the temperature over time with and without insulation. I can research facts about a chosen animal. I can identify different animals and use observations to move like different animals. Observe features of a spider. Explain ideas Planning simple test Predict what will happen. Evaluate snow Record results in a simple bar chart. I can make sensible predictions about where animals may live. I can explain in simple terms how animals adapt to their habitat. I can ask questions to help research facts about an animal. I can apply my knowledge of animals through movement.		Explore and compare the differences between things that are living, dead and things that have never been alive. Identify most living things live in habitats to which they are suited and describe how different habitats provide for basic needs of different kinds of animals and plants and how the depend on each other. Identify and name a variety of plants and animals in their habitat, including microhabitats. 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. Identify and classify objects Identify habitats Research facts about animals Look for patterns in data Find out what animals eat. Ask questions Draw basic conclusions Record Observations Use tables and pictograms Interpret results Communicate findings		To recognise that living things can be grouped in a variety of ways. -To explore and use classification keys to help group. -Identify and name a variety of living things in the environment. -Recognise that environments can change and this can sometimes pose dangers to living things. Identify animals and classify into different groups. Identify similarities and differences In human characteristics. Find patterns in mini beast habitats. Identify animals and classify into groups Research endangered animals. I can research the effects of changing environment. Observe characteristics of living things Identify similarities and differences in characteristics. To gather and record data in a table. I can record observations from scientific enquiry. I can ask relevant questions to classify things. I can use evidence to answer questions and present findings. Record findings about endangered Species.	Describe the differences in life cycles of a mammal, an amphibian, an insect and a bird. Describe the life process of reproduction in some plants and animals. Identify patterns that might be found in the natural environment. Identify and classify different life cycles. I can use secondary sources to research naturalists and behaviouralists. Report and present findings from research. I can plan and carry out a fair test accurately. I can look for patterns when considering gestation periods of animals. Use oral and written forms to report conclusions. Present data in a variety of different ways to help answer my questions. Ask relevant questions and find ways to answer them. I can make accurate and relevant predictions. I can suggest next steps based on the Weakest aspects of the enquiry. Record my results using a bar chart and explain the results.	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. Sort based on observable characteristics. Classify and sort using classification keys. Research genus and species. Research animals to classify Observe microorganisms over time. Notice patterns. Record in a table Answer own questions. Use classification keys. Raise questions about animals to group. Observe and raise questions. Predict how microorganisms will decay food Evaluate effects of yeast.
Everyday Materials	Use all their senses in hands-on exploration of natural materials. Explore collections of materials with similar and/or different properties. Talk about the differences between materials and changes they notice. Learn new vocabulary I can identify and sort different materials. I can identify and sort different materials. I can compare how different materials react in water. I can compare how different materials react in water. I can draw pictures or spot different materials in my	I can distinguish between an object and the material from which it is made. I can identify and name a variety of everyday materials including wood, plastic, glass, metal, water and rock. I can describe the simple properties of a variety of everyday materials. I can compare and group together a variety of everyday materials on the basis of their simple properties. Identify materials and classify Classify based on how they feel. Classify materials Compare suitability of materials Find patterns in test results, Use observations to classify Record in a table Ask and answer questions Carry out a simple test	To identify and compare the suitability of a variety of everyday materials including wood, metal, plastic, glass, brick, rock, paper, cardboard for particular uses. I can find out how the shape of solid objects made from materials can be changed by squashing, bending, twisting and stretching. Compare and group materials. Identify materials Use research for understanding Notice patterns between materials. Comparative test. Identify and classify materials. Labelled diagrams Draw basic conclusions Carry out simple comparative tests. Predicting best material Evaluate findings of tests			Compare and group together everyday materials based on their properties, including hardness, solubility, transparency, conductivity 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 solid, liquid and gas to decide how mixtures might be separated including through filtering, sieving and evaporation. Give reasons based on evidence from comparative 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 this kind of change is not usually reversible, including changes associated with burning and the	

	environment. I can draw pictures or spot different materials in my environment. I notice similarities and differences within the materials.	Make predictions on best materials. Evaluate test				action of acid on bicarbonate of soda. Identify different materials and classify based on its properties. I can identify the properties of different materials based on whether it will dissolve. I can make observations over time I can compare how reversible and Irreversible materials act when heated and cooled. I notice patterns in my results. I learn about famous scientists and what major discoveries they have made. Evaluate my test. I can make predictions about which materials are soluble and insoluble. I can use scientific language and illustrations to discuss, communicate and justify ideas. I can make careful observations when heating solutions. I can plan my own test based on how Materials react with one another. I can record results in a table	

Light				To recognise we need light in order to see things and that dark is the absence of light. Light is reflected from surfaces. Recognise that light from the sun can be dangerous and that there are ways to protect your eyes. Recognise that shadows are formed when light from a light source is blocked by an opaque object. Find patterns in the way that the shadows change. I can compare how different materials react to light. I can identify patterns in my results to answer questions I can observe what happens over time. I can spot patterns in results to answer questions. I can look for patterns in results, I can observe a shadow over time. I can carry out a fair test and control variables. I can look for patterns in the size of the shadows. I can raise questions when exploring materials and light. I can make predictions based on scientific questions. I can set up practical comparative tests using my own ideas. I can record my results in a table. I can interpret my results and report on patterns found. I can evaluate my test and suggest improvements. I can observe what happens when an object is moved closer to a light source.			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. Look for patterns in how light is reflected. Use SK and research to make a periscope. Identify different parts of the eye. Look for patterns in observations. Use SK about refraction to make predictions I can look for patterns in how we see things. Use scientific models and labelled diagrams. Use diagrams to support explanation. Make careful observations. Draw diagrams with accuracy Make predictions based on SK. Evaluate using scientific language
Magnets				I can compare how things move on different surfaces. I notice that some forces need contact between two objects, but magnetic forces can act at a distance. I can observe how magnets attract or repel each other and attract some materials and not others. I can 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. I can describe magnets as having two poles. Predict whether two magnets will attract or repel each other, depending on which poles are facing. Group and identify forces based on observations. Research John McAdam to create own road surfaces. Sort and classify materials into magnetic and non-magnetic. I can carry out a fair test using magnets. I can spot patterns in my drawings and explain what is happening using magnetic fields. I can use research and secondary sources to aid my explanations. I can observe different forces. Evaluate my choices and suggest further improvements. I can predict whether materials are magnetic or not. I can plan a fair test I can record my findings using			

				scientific drawings. I can use models to explain findings.			
Rocks				To compare and group together different kinds of rocks on the basis of their appearance and simple physical properties. To describe in simple terms how fossils are formed when things that have lived are trapped within rock. To recognise that soils are made from rock and organic matter. Compare and group materials based on their properties. Classify rocks based on their properties. Carry out comparative tests to rank rock properties. Research and learn about Mary Anning. Use research and models to help demonstrate my learning. I can make careful and systematic observations over time. Make careful observations and identify similarities and differences. Record classifications in a table, Venn or Carrol diagram. I can record my results in a table. Interpret the process of fossilisation using models and pictures. Ask questions to deepen my learning about rock formation. I can set up tests to answer questions.			
Electricity					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 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. Identify electrical components and classify appliances. I can identify patterns in my observations. I can conduct a comparative test. I can identify the properties of materials. I can find out about different scientists and energy sources. I know how electricity has developed over time. I can record my work using labelled drawings I can make predictions using scientific language I can interpret my results using my scientific knowledge I can identify the properties of different		To 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. To associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit. To use recognised symbols when representing a simple circuit in a diagram. Identify electrical components. Notice patterns in my investigation. Comparative tests. Fair test Using research Identify components Answer questions by investigating Take accurate measurements Develop predictions Present results in line graph. Use diagrams to support explanation Scientific diagrams.

					materials. I can pose scientific questions I can record how electricity can help us		
Seasonal changes	I can explore the world around me, making observations of colour. I can participate in discussions and offer my own ideas using scientific words. I understand some important processes and changes in the world, including colour and how they change by mixing. ELG: Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter. I can identify each season. I can observe a tree over time through the seasons. I can use ID charts to find out about seasons. I can identify each season and classify things in the correct season. I can use the pictures from stories to help me learn about seasons. I can identify and classify between different seasons I can draw pictures to explain what happens in each season. I can make careful observations about the changes in the seasons. I can explain what happens in each season I can make simple predictions about which seasons things belong in. I can ask questions to help my understanding I can evaluate my learning and demonstrate my knowledge of seasons.	I can observe changes across four seasons. I can observe and describe weather associated with the seasons and how day length varies. Identify 4 seasons Look for patterns in colours. Observe formation of crystals over time. Compare results to research rain. Simple comparative test. Identify different clouds. Observe similarities and differences. Predict colours in a leaf. Can explain what winter feels like.					
Plants		To identify and describe the basic structure of a variety of common flowering plants including trees. To identify and name a variety of common wild and garden plants including deciduous and evergreen Trees. Find out how different fruits grow. Observe seeds over time. Identify plants in the environment. Identify and classify parts of a plant. Identify and classify leaves. Observe leaves over time. Label parts of a plant Ask yes and no questions to classify. Make simple predictions. Observe similarities and differences. Predict colours in a leaf. Can explain what winter feels like.	To observe and describe how seeds and bulbs grow into mature plants. Find and describe how plants need water, light and a suitable temperature to grow and stay healthy. Identify and classify parts of a flower Observe over time how plants grow Use a Venn diagram to sort and classify Identify plants in the environment using observations Observe plants over time Record observations over time Carry out comparative tests Label parts of a flower Make observations on how a plant grows Use a Venn diagram to sort and classify Identify plants in the environment using observations Make basic predictions Communicate clearly how plants grow Ask questions to investigate Observe plants in different climates Record results and take accurate measurements Evaluate learning	I can identify and describe the functions of different parts of a flowering plant. I can explore the requirements of plant life and growth. I can investigate the way in which water is transported within plants. I can explore the part that flowers play in the lifecycle of flowering plants including pollination, seed formation and seed dispersal. I can identify parts of the plant I can carry out a comparative test. I can make observations over time. I can use research and my own scientific knowledge to explain the process. I can look for patterns I can identify and classify different seeds. I can record my findings using labelled scientific diagrams. I can plan a comparative test. I can interpret my findings using scientific knowledge. I can explain in detail what pollination is. I can evaluate my seed spinner. I can look carefully at seeds.			

Forces						I can explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. I can identify the effects of air resistance, water resistance and friction, that act between moving surfaces. I can recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect Research the effects of gravity and Sir Isaacs equipment. Observe over time how many times a pendulum swings. Conduct a fair test to explore the effects of air resistance on a falling object. Conduct a comparative test to investigate water resistance. Conduct a fair test to investigate friction. Look for patterns in my results. Observe different forces and measure the force using different equipment. Set up a test to change the speed of a pendulum. Interpret and communicate results from data using scientific vocabulary Plan different types of enquiry to answer a question. Take measurements using a range of scientific equipment. Record results in a table.	
Sound					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 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. Identify how sounds are made. Conduct a fair test to establish the best string phone. Spot patterns in results into how well sound travels. Research how hearing aids work. Pattern seek to make conclusions. Carry out a pattern seeking enquiry. Set up a fair test Look for patterns in results. I can observe vibrations which cause Sound. Measure distance to nearest cm. Set up tests to create the best string Phone. Record results in a table and spot patterns. Record sound measured in DB in a table. Produce a line graph. Evaluate musical instrument based on sound and knowledge of pitch. Observe how sounds are created. Set up own tests and record results.		

States of matter					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. Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. I can compare and group materials together depending on their properties. I can look for patterns in my observations. I can construct a fair test to investigate melting points. I can observe what happens when a liquid changes to a solid. I can carry out a fair test and identify change and measure factor. Make careful observations and Identify similarities and differences. I can make predictions using straightforward evidence and observations. I can use a thermometer to take accurate measurements. I can interpret what I have observed using my own scientific knowledge. I can set up tests to answer questions I can record using diagrams what I know about the water system.		

Earth and Space						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 approximate spherical bodies. Use Earth rotation to explain day and night due to the apparent movement of the sun across the sky. Identify and classify planets Observe changes over time Use research and secondary sources to find out about the moon. Look for patterns in day light hours. Conduct a fair test where variables are controlled. Raise questions and suggest reasons for similarities and differences. Use measurement to represent planets in a model Record my work using scientific diagrams and labels. Use a model to discuss, communicate and justify scientific ideas using scientific vocabulary. Present results in a variety of ways to answer a question. Plan own test and control variables.	
Evolution and inheritance							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 dentical to their parents Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution. Use scientific evidence to support or refute arguments. Explain research using scientific knowledge and understanding. Can identify patterns which can be found in natural environments. Draw conclusions when sorting and classifying. Can present findings in oral and written form using research. I can look for patterns when considering variation. Use ideas from secondary sources to explain ideas. Raise questions about a range of phenomena. Develop predictions which can be found in natural environments. Use scientific reasons to make overall comparisons. Use scientific diagrams to explain abstract concepts. Describe and evaluate my own and other people's scientific ideas.