

Roundswell Community Primary Academy
Progression of Skills, Knowledge and Understanding in Science and Technology - Science

Year 1

Objective reference	Learning Objectives	Topic
S1.1	Observe closely while manipulating simple equipment, to generate and explore answers to questions.	Working Scientifically
S1.2	Record simple data to answer questions. (Use all of the following over the course of the year: drawings, displays, photographs, given tables and simple measurements)	Working Scientifically
S1.3	Use key scientific vocabulary to give simple explanations, using recorded voices, phonetic based writing and labelled photographs	Working Scientifically
S1.4	Ask simple questions which lead to exploring a range of simple investigations.	Working Scientifically
S1.5	Record data over an extended period of time.	Working Scientifically
S1.6	Identify and group animals according to their food source i.e. carnivores, herbivores and omnivores	Claws, Paws, Wings and Fins
S1.7	Identify, compare and describe the features of a variety of common animals including fish, birds, amphibians, reptiles, mammals and invertebrates.	Claws, Paws, Wings and Fins
S1.8	Understand how some features of common animals can be adaptations to their environment.	Claws, Paws, Wings and Fins
S1.9	Identify, name, draw and label the basic parts of the human body	Claws, Paws, Wings and Fins
S1.10	Understand how humans and animals use their bodies to perceive the world through their senses	Claws, Paws, Wings and Fins
S1.11	Distinguish between an object and the material from which it is made	Plunder, Parrots and Planks
S1.12	Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water and rock	Plunder, Parrots and Planks
S1.13	Sort a variety of everyday materials on the basis of their	Plunder, Parrots and Planks

Roundswell Community Primary Academy
Progression of Skills, Knowledge and Understanding in Science and Technology - Science

	simple physical properties.	
S1.14	Use their senses to explore and recognise the similarities and differences between materials	Plunder, Parrots and Planks
S1.15	Know that objects made from some materials can be changed in shape by processes including squashing, bending, twisting and stretching	Plunder, Parrots and Planks
S1.16	Understand that the uses to which materials are put depend on their properties	Plunder, Parrots and Planks
S1.17	Identify and name a variety of common plants including garden, wild flowers and trees	We Are What We Eat
S1.18	Know the basic condition for survival and growth of healthy plants	We Are What We Eat
S1.19	Begin simple classification of plants, recognising similarities and differences, including deciduous and evergreen	We Are What We Eat
S1.20	Understand the basic structure of a variety of plants including trees: leaf, flower, stem/trunk, root and how they change as plant seeds and bulbs germinate and mature.	We Are What We Eat
S1.21	Observe changes across the four seasons	We Are What We Eat

Year 2

Objective	Learning Objectives	Topic
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Roundswell Community Primary Academy
Progression of Skills, Knowledge and Understanding in Science and Technology - Science

reference		
S2.1	Give simple explanations of similarities, differences and patterns within investigations using scientific vocabulary to answer questions	Working Scientifically
S2.2	Identify and classify objects and living things through comparison of similarities and differences	Working Scientifically
S2.3	Record findings in various formats to answer questions. (Use all of the following over the course of the year: drawings, diagrams, bar charts, tables, displays, photographs, scientific labels, maps)	Working Scientifically
S2.4	Use questions to lead learning and support children to explore and research their own ideas	Working Scientifically
S2.5	Ask simple questions, (with support) as a starting point to develop comparative fair tests	Working Scientifically
S2.6	Find out things from a range of secondary information sources including books, websites and information packs	Working Scientifically
S2.7	Make measurements using standard and non-standard units to collect evidence	Working Scientifically
S2.8	Recognise and name a variety of sound sources, noticing that we hear with our ears.	Superheroes
S2.9	Understand that sounds become fainter as you travel from the source	Superheroes
S2.10	Know that many everyday appliances use electricity	Superheroes
S2.11	Construct simple circuits involving batteries, wires and bulbs and buzzers	Superheroes
S2.12	Distinguish between an object and the material from which it is made	Superheroes
S2.13	Describe the simple physical properties of a variety of everyday materials, including wood, plastic, glass, metal, water, and rock and use these properties to group them. (Including natural and manmade)	Were they hard times?
S2.14	Identify and compare the uses of a variety of everyday materials, including wood, metal, plastic, glass, brick/rock, and paper/cardboard	Were they hard times?
S2.15	Understand how things move at different speeds, speed up, slow	Were they hard times?

Roundswell Community Primary Academy
Progression of Skills, Knowledge and Understanding in Science and Technology - Science

	down, and change direction using simple comparisons, comparative vocabulary and superlative vocabulary	
S2.16	Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching	Were they hard times?
S2.17	Understand how forces and different surfaces can change how an object is moving	Were they hard times?
S2.18	Understand the differences between things that are living or dead and things that have never been alive.	Mysteries of the Rainforest
S2.19	Know the basic needs for animals (including humans) and plants e.g. water, air and light, explore temperature with seasons	Mysteries of the Rainforest
S2.20	Understand the importance of exercise and eating the right amounts of food for humans	Mysteries of the Rainforest
S2.21	Understand how different food groups can be combined to create a healthy diet	Mysteries of the Rainforest
S2.22	Identify the life cycles of both flowering plants and everyday animals (Including how humans and animals develop through stages. Vocabulary: baby, toddler, teenager, adult, pregnancy)	Mysteries of the Rainforest
S2.23	Identify, group and name a variety of plants and animals in a variety of habitats (including micro-habitats), including birds, invertebrates, mammals	Mysteries of the Rainforest
S2.24	Know how different habitats and animals provide for and depend on each other	Mysteries of the Rainforest
S2.25	Understand how animals obtain their food from plants and other animals using the idea of a simple food chain.	Mysteries of the Rainforest
S2.26	Explore how environments need to be protected and maintained and the impact we have on them. (e.g. endangered wildlife)	Mysteries of the Rainforest

Year 3

Objective reference	Learning Objectives	Topic
S3.1	Explain their experience and observation of phenomena using	Working Scientifically

Roundswell Community Primary Academy
Progression of Skills, Knowledge and Understanding in Science and Technology - Science

	key scientific vocabulary	
S3.2	Create comparative and fair tests by identifying one or more control variables within an investigation	Working Scientifically
S3.3	Respond to given questions and develop their own to create simple practical enquiries, comparative and fair tests	Working Scientifically
S3.4	Recognise obvious risks when prompted	Working Scientifically
S3.5	Make accurate measurements using standard units, using a range of measuring equipment, including thermometers and data loggers	Working Scientifically
S3.6	Gather, record, classify and present data in a variety of ways to help in answering their key question	Working Scientifically
S3.7	Record findings using key scientific language to answer their own investigation. (Use all of the following over the course of the year: drawings, labelled diagrams, bar charts, keys, children's photographs and tables.	Working Scientifically
S3.8	Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions, identifying similarities, differences or changes.	Working Scientifically
S3.9	Use results to draw simple conclusions and suggest improvements and new questions for setting up further tests	Working Scientifically
S3.10	Identify straightforward patterns in observations or in data presented in various formats, including tables, pie and bar charts, labelled diagrams, keys etc.	Working Scientifically
S3.11	Use straightforward scientific evidence to answer questions or to support their findings	Working Scientifically
S3.12	Describe what they have observed in experiments or investigations, linking cause and effect	Working Scientifically
S3.13	Explain the purpose of a variety of scientific or technological developments	Working Scientifically
S3.14	Describe the use of electricity to power common appliances and its effect (heat, light, movement etc.)	The Rise of the Robots
S3.15	Demonstrate that a circuit must be correctly constructed and complete in order for components to function	The Rise of the Robots
S3.16	Know about ways of varying the current in a circuit to make bulbs	The Rise of the Robots

Roundswell Community Primary Academy
Progression of Skills, Knowledge and Understanding in Science and Technology - Science

	brighter or dimmer	
S3.17	Explain that some materials conduct electricity while others do not	The Rise of the Robots
S3.18	Understand switches are created through closing and opening any part of the circuit	The Rise of the Robots
S3.19	Recognise the materials which are common conductors and insulators of electricity	The Rise of the Robots
S3.20	Know how to construct own switches using conducting materials	The Rise of the Robots
S3.21	Know about the forces of attraction and repulsion between magnetic poles and use this knowledge to predict whether magnets will attract or repel each other	Active Planet
S3.22	Know that magnets are an example of a force that attracts some metals	Active Planet
S3.23	Understand how some forces need contact between two objects and how some forces can act at a distance	Active Planet
S3.24	Identify materials which can be attracted to a magnet and use this to identify metals in everyday objects	Active Planet
S3.25	Understand 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	Explorers and Adventurers
S3.26	Describe in simple terms, the ways in which nutrients, water and oxygen are transported within animals, including humans	Explorers and Adventurers
S3.27	Identify that humans and some animals have skeletons and muscles for support, protection and movement	Explorers and Adventurers
S3.28	Know that male and female humans and other animals can produce healthy offspring	Explorers and Adventurers
S3.29	Understand the roles of drugs and medicines in keeping us well	Explorers and Adventurers
S3.30	Know about the effects of a healthy or unhealthy diet on the human body	Explorers and Adventurers
S3.31	Identify and describe the functions of different parts of plants: roots, stem/trunk, leaves and flowers	Explorers and Adventurers
S3.32	Know that the root anchors the plant and that water and nutrients are taken in through the root and transported through the stem to other parts of the plant	Explorers and Adventurers

Roundswell Community Primary Academy
Progression of Skills, Knowledge and Understanding in Science and Technology - Science

S3.33	Know that pollen pollinates the ovule of a flower to form seeds which are dispersed in different ways	Explorers and Adventurers
S3.34	Know that plants need light to produce food for growth and the importance of the leaf to this process	Explorers and Adventurers
S3.35	Describe the ways in which nutrients, water and oxygen are transported within plants	Explorers and Adventurers
S3.36	Identify the requirements of plants for life and growth (air, light, water, nutrients from soil and space) and how they vary from plant to plant	Explorers and Adventurers
S3.37	Classify plants according to various features including size and shape of leaves, flowers etc.	Explorers and Adventurers
S3.38	Based on testing, explore different properties shared by materials, including attraction to a magnet, and floating or sinking	Active Planet
S3.39	Compare and group together a variety of everyday materials based on these properties	Active Planet
S3.40	Compare and group together different kinds of rocks on the basis of their simple physical properties	Active Planet
S3.41	Relate the simple physical properties of some rocks to their formation (igneous or sedimentary)	Active Planet
S3.42	Understand that soils are made of rocks and organic matter	Active Planet
S3.43	Describe in simple terms how fossils are formed when things that have lived are trapped within sedimentary rock	Active Planet
S3.44	Know how to separate solid particles of different sizes by sieving	Active Planet

Roundswell Community Primary Academy
Progression of Skills, Knowledge and Understanding in Science and Technology - Science

Year 4

Objective reference	Learning Objectives	Topic
S4.1	Use scientific ideas and vocabulary when describing simple processes or phenomena	Working Scientifically
S4.2	Identify a range of variables you can use within an investigation to create a question	Working Scientifically
S4.3	Respond to given questions and develop their own comparative and fair tests	Working Scientifically
S4.4	Identify obvious risks when prompted	Working Scientifically
S4.5	Beginning to make systematic and accurate measurements using standard units, with a range of equipment	Working Scientifically
S4.6	Select ways to gather, record, classify and present data in a variety of ways to help in answering their experimental question	Working Scientifically
S4.7	Record findings using appropriate scientific language to inform conclusions drawn. (Use all of the following over the course of the year: drawings, labelled diagrams, keys, bar charts, and tables	Working Scientifically
S4.8	Report on findings from enquiries, including written explanations of results and conclusions, displays or presentations	Working Scientifically
S4.9	Use results to draw simple conclusions and suggest improvements, new questions and predictions for setting up further tests	Working Scientifically
S4.10	Identify differences, similarities and patterns in data presented in various formats, including line graphs	Working Scientifically
S4.11	Use straightforward scientific evidence to answer questions or to support their findings	Working Scientifically
S4.12	Describe what they have found out in experiments or investigations, linking cause and effect	Working Scientifically
S4.13	Identify scientific evidence that is being used to support or refute ideas or arguments	Working Scientifically
S4.14	Select appropriate equipment or information sources to address specific questions or ideas under investigation	Working Scientifically

Roundswell Community Primary Academy
Progression of Skills, Knowledge and Understanding in Science and Technology - Science

S4.15	Explain the purpose of a variety of scientific or technological developments	Working Scientifically
S4.16	Identify and name a variety of living things in the local and wider environment, using classification keys to assign them to groups	In the News
S4.17	Give reasons for classifying plants and animals based on specific characteristics and how they are suited to their environment	In the News
S4.18	Identify and name a variety of living things that can be grouped as producers, consumers, predator, prey, herbivores, carnivores and omnivores	In the News
S4.19	Explain, by using and constructing food chains and simple food webs, how feeding relationships occur in the local environment	In the News
S4.20	Identify and name the basic parts of the digestive system in humans (mouth, tongue, teeth, oesophagus, stomach, small and large intestine, anus)	Democracy
S4.21	Identify the simple functions of the teeth and different types of teeth in humans	Democracy
S4.22	Know how shadows are made when the straight line of travel of light from a light source is blocked by something that is not transparent i.e. opaque or translucent	Stargazers
S4.23	Understand through investigation how the size of size of a shadow can be altered	Stargazers
S4.24	Describe the shapes, sizes and relative movements of the sun, moon, earth and other planets in the solar system	Stargazers
S4.25	Know that the Earth moves around the Sun, taking one year to do so; that the Moon moves around the Earth, taking 28 days to do so; and that the Earth revolves, taking one day	Stargazers
S4.26	Know that the Earth spins on its own axis and how this results in the apparent movement of the sun across the sky and that this results in day and night.	Stargazers
S4.27	Identify the four seasons and the regular changes in sunlight and weather associated with them in the UK	Stargazers
S4.28	Group together materials according to whether they are solids, liquids or gases	Stargazers
S4.29	Understand that materials change state when they are heated or cooled, and measure the temperature at which this happens in	Stargazers

Roundswell Community Primary Academy
Progression of Skills, Knowledge and Understanding in Science and Technology - Science

	degrees Celsius (°C)	
S4.30	Understand how the state of water changes within the water cycle and how this relates to temperature, using correct scientific vocabulary (evaporation/condensation)	Stargazers
S4.31	Know about the principles of water power as a renewable and sustainable energy source	Stargazers

Year 5

Objective reference	Learning Objectives	Topic
S5.1	Use scientific ideas and vocabulary accurately when describing simple processes or phenomena	Working Scientifically
S5.2	From initial question based exploration, plan enquiries, including recognising and controlling variables where necessary	Working Scientifically
S5.3	Take repeated measurements, selecting from a range of scientific equipment, (including digital) with increasing accuracy and precision	Working Scientifically
S5.4	Select appropriate equipment or information sources to address specific questions or ideas under investigation	Working Scientifically
S5.5	Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, bar and line graphs, and models	Working Scientifically
S5.6	Report findings from enquiries, including oral and written explanations of results, explanations involving causal relationships, and conclusions	Working Scientifically
S5.7	Present findings in written form, displays and other presentations to refute or support arguments.	Working Scientifically
S5.8	Use results to draw conclusions and suggest improvements, new	Working Scientifically

Roundswell Community Primary Academy
Progression of Skills, Knowledge and Understanding in Science and Technology - Science

	questions and predictions for setting up further comparative and fair tests	
S5.9	Develop the ability to use test results to make predictions to set up further comparative and fair tests	Working Scientifically
S5.10	Identify patterns in data presented in various formats, including line graphs, scatter graphs, classification keys and scientific diagrams and labels to inform predictions	Working Scientifically
S5.11	Recognise applications of specific scientific ideas and identify aspects of science used within particular jobs or roles, including the ways in which science and technology can be used to meet needs, wants and opportunities	Working Scientifically
S5.12	Compare and group together everyday materials based on a range of properties determined through investigation i.e. hardness, solubility, conductivity (electrical and thermal), magnetism, transparency	Different Pasts, Shared Futures
S5.13	Explain that some substances will dissolve in liquid to form a solution, and how to recover a substance from a solution	Different Pasts, Shared Futures
S5.14	Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including filtering, sieving and evaporating	Different Pasts, Shared Futures
S5.15	Give reasons, where appropriate, for the uses of everyday materials based on evidence from comparative and fair tests	Different Pasts, Shared Futures
S5.16	Understand that some changes of state (e.g. mixing, dissolving, melting, boiling, condensing, freezing and evaporating) are reversible changes, and identify reasons for this.	Different Pasts, Shared Futures
S5.17	Know how to recover separate parts from mixtures of powders by applying sieving, filtering, dissolving and evaporation techniques	Different Pasts, Shared Futures
S5.18	Know that some changes of materials can result in the formation of new materials and are irreversible e.g. cooking, burning and other chemical changes, and identify reasons for this	Different Pasts, Shared Futures
S5.19	Identify and name the basic parts of a simple electric series circuit, including cells, wires, bulbs, switches, and buzzers	Urban Pioneers
S5.20	Manipulate circuits to vary components function, including brightness of bulbs, loudness of buzzers and on/off position of switches, comparing and giving reasons for variations	Urban Pioneers

Roundswell Community Primary Academy
Progression of Skills, Knowledge and Understanding in Science and Technology - Science

S5.21	Explain the effect of changing the voltage of a battery	Urban Pioneers
S5.22	Know how to represent and construct circuits by using drawings, recognised symbols and diagrams	Urban Pioneers
S5.23	Describe the effects of static electricity and show that they occur when some materials are rubbed together	Urban Pioneers
S5.24	Know and explain that objects are seen because they give out or reflect light in a straight line into the eye	Urban Pioneers
S5.25	Understand that light travels in straight lines from a light source or is reflected from a surface into the eye	Urban Pioneers
S5.26	Know that light can be broken into colours and that different colours of light can be combined to appear as a new colour	Urban Pioneers
S5.27	Understand how the ray model of light explains the shape and size of shadows	Urban Pioneers
S5.28	Describe the changes as humans develop from birth to old age as part of the human lifecycle	Time Machine: AD900
S5.29	Describe respiration as the activity that releases energy from food as a fuel to maintain the body's activity, and identify that plants also respire	Time Machine: AD900
S5.30	Identify and name the basic parts and organs of the Human circulatory system - the heart, blood vessels, blood, blood pressure and clotting	Time Machine: AD900
S5.31	Identify and name the basic parts and organs of the gaseous exchange system - lungs, nose, throat, bronchi, bronchial tubes, diaphragm, ribs and breathing	Time Machine: AD900
S5.32	Describe the ways in which nutrients and water are transported within animals, including humans	Time Machine: AD900
S5.33	Understand the effect of exercise and rest on pulse rate	Time Machine: AD900
S5.34	Know about the importance of exercise for good health	Time Machine: AD900

Roundswell Community Primary Academy
Progression of Skills, Knowledge and Understanding in Science and Technology - Science

Year 6

Objective reference	Learning Objectives	Topic
S6.1	During initial exploration of phenomena, use scientific ideas and vocabulary accurately when describing processes	Working Scientifically
S6.2	Plan investigations, including recognising and controlling dependent and independent variables where appropriate	Working Scientifically
S6.3	Take measurements using a range of scientific equipment with increasing accuracy and precision	Working Scientifically
S6.4	Repeat sets of observations or measurements where appropriate, selecting suitable ranges and intervals	Working Scientifically
S6.5	Select appropriate equipment or information sources to address specific questions or ideas under investigation	Working Scientifically
S6.6	Record data and results of increasing complexity, using scientific diagrams and labels, classification keys, tables, bar, line and scatter graphs, and models	Working Scientifically
S6.7	Report findings from investigations, including written explanations of and degree of trust in results, explanation involving causal relationships, and conclusions to support or refute ideas or arguments.	Working Scientifically
S6.8	Continuing to develop the ability to use test results to make predictions to set up further comparative and fair tests	Working Scientifically
S6.9	Interpret data in a variety of formats, recognising obvious inconsistencies	Working Scientifically
S6.10	Describe different viewpoints a range of people may have about	Working Scientifically

Roundswell Community Primary Academy
Progression of Skills, Knowledge and Understanding in Science and Technology - Science

	scientific or technological developments	
S6.11	Distinguish between opinion and scientific evidence in contexts related to science, and use evidence rather than opinion to support or challenge scientific arguments	Working Scientifically
S6.12	Draw valid conclusions that utilise more than one piece of supporting evidence, including numerical data and line graphs	Working Scientifically
S6.13	Explain, through observation, that forces push and pull objects, making them change shape, and that there is always something doing the pushing or pulling either by contact or at a distance	What Price Progress?
S6.14	Investigate how forces, including gravity and drag forces such as, friction, air resistance and water resistance, affect the movement of a variety of objects	What Price Progress?
S6.15	Explain that drag forces tend to slow things down, including air resistance and, to a greater extent, resistance in liquids	What Price Progress?
S6.16	Describe, in terms of drag forces, why moving objects that are not driven tend to slow down	What Price Progress?
S6.17	Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object	What Price Progress?
S6.18	Measure the size of a force	What Price Progress?
S6.19	Understand that force and motion can be transferred through mechanical devices such as gears, pulleys, levers and springs and that they can increase the effect of a force.	What Price Progress?
S6.20	Use abstract ideas or models of more than one step when describing processes or phenomena	What Price Progress?
S6.21	Determine the distance travelled based on the speed and time of travel	What Price Progress?
S6.22	Observe and name a variety of sources of sound, noticing that we hear with our ears after vibrations travel through a medium	People Power
S6.23	Identify how sounds are made, associating some of them with something vibrating	People Power
S6.24	Recognise that sounds get fainter as the distance from the sound source increases	People Power
S6.25	Find patterns between the pitch of a sound and the features of an object that produced it	People Power

Roundswell Community Primary Academy
Progression of Skills, Knowledge and Understanding in Science and Technology - Science

S6.26	Find patterns between the volume of a sound and the strength of the vibrations that produced it	People Power
	Science revision as required	
S6.27	Explain and give reasons for the classification of living things into broad groups according to common observable characteristics and based on similarities and differences, including plants, animals and micro-organisms	War and Peace
S6.28	Know that there are life processes including nutrition, movement, growth and reproduction common to animals, including humans	War and Peace
S6.29	Describe the life processes of reproduction in some plants and animals, including sexual and asexual reproduction in plants, and sexual reproduction in animals	War and Peace
S6.30	Know and describe the life cycles common to a variety of animals including humans and to a variety of plants (growth, reproduction and death)	War and Peace
S6.31	Give reasons why living things produce offspring of the same kind, but in many cases offspring are not identical with each other or with their parents	War and Peace
S6.32	Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird.	War and Peace
S6.33	Use basic ideas of inheritance, variation and adaptation which can describe how living things could change over time and evolve	War and Peace
S6.34	Describe how fossils are formed and provide evidence of evolution	War and Peace