

Year 1

Plants

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

Identify different plants and trees using secondary sources such as identification sheets.



Classify plants by leaf shape and their own chosen criteria and use

this to answer their own questions.

Vocabulary

Buds, bulbs, deciduous, evergreen, trunk, vegetable, wild plants, environment, blossom, petals, branches, oak, hawthorn, sycamore, pine, roots, stem, trunk, bark

Animals, including humans

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



Use secondary sources to answer the question 'What do minibeasts eat?'

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

Perform simple tests and make a prediction by investigating senses of smell and taste.

To know about the work of a modern scientist – Taneesha Allen

Vocabulary

Fish, amphibians, reptiles, birds, mammals, nocturnal, omnivore, herbivore, carnivore, senses, thigh, shin, elbow, ankle, wrist, shoulder, hip, fore arm, upper arm, chest stomach, scales, fin, gill, claws, feathers, fur, predict, Taneesha Allen

Everyday Materials

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



Perform simple tests by investigating how waterproof different materials are.

Observe closely using egg

timers to maintain fair testing and gather and record data in a table to help answer the question 'Which fabric is the most waterproof?'

Use their observations and ideas to suggest answers to the question 'What material would be best to use for a raincoat?'

To know about the work of a historical scientist – Charles Macintosh

Vocabulary

Materials, wood, plastic, metal, glass, water, rock, stiff, bend, stretch, shiny, waterproof, egg timer, fair test, table, Charles Macintosh,

Seasonal Changes

Observe changes and describe weather and day length associated with spring

Observe changes and describe weather and day length associated with summer

Observe changes and describe weather and day length associated with autumn

Observe changes and describe weather and day length associated with winter

Observe decaying leaves closely using magnifying glasses

Vocabulary

Autumn, spring, summer, winter, temperature, fall, weather, thermometer, deciduous, coniferous, long day, short day, sunlight, magnifying glass

Year 2

Plants

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



Ask simple questions about similarities and differences

between seeds and bulbs

Recognise that questions can be answered in different ways

Vocabulary

Seed, bulb, roots, deciduous, evergreen, blossom, trunk, stem, oxygen, carbon dioxide, grow, mature

Animals, including humans

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



Ask simple questions about similarities and differences between different offspring

Recognise that questions can be answered in different ways

To know about the work of a modern scientist – Dr Kelly Blacklock

Vocabulary

Offspring, adult, baby, toddler, child, teenager, humans, animals, survive, water, food, air, exercise, food, energy, hygiene, healthy, Dr Kelly Blacklock

Uses of everyday materials

Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper, cardboard **and fabric** for particular uses

Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching



Asking simple questions and recognising they can be answered in different ways by performing simple tests -

investigating how stretchy different fabrics are. Gather and record data to help in answering the question 'Which fabric is the stretchiest?'

To know about the work of a historical scientist – Chester Greenwood

Vocabulary

Metal, plastic, wood, glass, brick, rock, paper, cardboard, fabric, squashing, bending, twisting, stretching, paper, permeable, impermeable, rigid, flexible, suitable, Chester Greenwood

Living things and their habitats

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 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

To know about the work of a modern scientist – Dawood Qureshi

Vocabulary

Living, dead, never been alive, habitat, depend, microhabitats, food chain, sources, shelter, predator, prey, Dawood Qureshi

Year 3

Plants

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 effect of added or excluded nutrients on the growth of plants

by setting up their own simple practical enquiries; taking accurate measurements of time and height using standard units; using scientific evidence to answer questions and using results to draw conclusions, make predictions for new values, suggest improvements and ask further questions.

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

To know about the work of a modern scientist – Kelsey Byers

Vocabulary

Function, roots, stem, trunk, leaves, flowers, growth, air, light, water, nutrients, transport, life cycle,

Animals, including humans

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



Use secondary sources to answer the question 'What proportion of different food groups is healthy for children?'

Identify that humans and some other animals have skeletons and muscles for support, protection and movement

Vocabulary

Nutrition, food, energy, carbohydrate, protein, fats, dairy, skeleton, muscles, cartilage, diet, joint, pelvis, ribcage, spine, movement, support

Rocks



Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties

(Identifying differences, similarities or changes related to simple scientific ideas and processes). Use this to answer their own questions.

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

To know about the work of a historical scientist – William Smith

Vocabulary

Appearance, rock, soils, sedimentary, hard, soft, dull, shiny, rough, smooth, fossils, organic matter, metamorphic, igneous, permeable, impermeable William Smith

Light

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 an opaque object

Find patterns in the way that the size of shadows change

To know how the sun's rays travel to our solar panels.



Choose their own resources to help them gather data, record using a table and present using

a line graph and labelled diagram to answer the question 'How do shadows change throughout the day?' including changes in size. Present results and conclusions orally to the class

Vocabulary

Reflection, dark, shadows, light source, opaque, refraction, convex, protect, solar panel, prediction, results, conclusion, line graph

Forces and magnets



Compare how things move on different surfaces

by using scientific evidence through investigating the question 'How does friction affect the distance a toy car can travel?' Setting up their own comparative test; making systematic and careful observations using standard units; reporting findings through written explanations and drawings; using results to draw conclusions; suggest improvements, and make predictions for future investigations.

Notice that some forces need contact between 2 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



Identify differences, similarities or changes to how magnets work through other




<p>pollination, seed formation, seed dispersal, Kelsey Byers</p>				<p>objects. Use this to answer their own question</p> <p>Describe magnets as having 2 poles</p> <p>Predict whether 2 magnets will attract or repel each other, depending on which poles are facing</p> <p>Vocabulary Surface, force magnetic pole, attract, repel, push, pull, surface, friction, magnetic, magnet, north, south, contact, improvement, prediction, results, conclusion</p>
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Year 4

<p>Living things and their habitats</p>  <p>Recognise that living things can be grouped in a variety of ways (Identify differences, similarities or changes related to simple scientific ideas and processes). Use this to answer their own question.</p>  <p>Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. Use their own classification keys to answer questions.</p> <p>Recognise that environments can change and that this can sometimes pose dangers to living things</p>	<p>Animals, including humans</p> <p>Describe the simple functions of the basic parts of the digestive system in humans</p> <p>Identify the different types of teeth in humans and their simple functions</p> <p>Construct and interpret a variety of food chains, identifying producers, predators and prey</p> <p>Vocabulary Food chain, producers, consumers, predators, herbivore, carnivore, habitat, prey, omnivore, digestive system, mouth, tongue, teeth, oesophagus, stomach, small intestine, large intestine, anus, rectum, tooth, canine, incisor, molar, premolar</p>	<p>Materials – States of matter</p> <p>Compare and group materials together, according to whether they are solids, liquids or gases</p> <p>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)</p> <p>Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature</p>  <p>Set up their own practical enquiry to investigate the answer to the question ‘At what temperature does chocolate melt?’ by making systematic and careful observations and taking accurate measurements of temperature; using scientific evidence to support their findings; using results to draw simple conclusions, make predictions for new values, suggest improvements and raise</p>	<p>Sound</p> <p>Identify how sounds are made, associating some of them with something vibrating</p> <p>Recognise that vibrations from sounds travel through a medium to the ear</p> <p>Find patterns between the pitch of a sound and features of the object that produced it</p>  <p>Find patterns between the volume of a sound and the strength of the vibrations that produced it by taking accurate measurements of standard units of sound using data loggers</p> <p>Recognise that sounds get fainter as the distance from the sound source increases</p> <p>To know about the work of a historic scientist – Alexander Graham Bell</p>	<p>Electricity</p> <p>Identify common appliances that run on electricity</p> <p>Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers</p> <p>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</p> <p>Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit</p> <p>Recognise some common conductors and insulators, and</p>
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<p>To know about the work of a modern scientist – Jane Goodall</p> <p>Vocabulary Environment, danger, amphibians, reptiles, birds, classification, mammals, population, development, deforestation, litter, Jane Goodall</p>		<p>further questions; report on findings from enquiries with written explanations of results and conclusions and reporting findings using a bar chart.</p> <p>Vocabulary Solid, solidify, liquid, gas, change state, degrees celcius (°C), evaporation, condensation, water cycle, thermometer, water vapour, prediction, results, conclusion, bar chart</p>	<p>Vocabulary Sound, volume, amplitude, loud, quiet, travel, wave, particle, ear, high, low, pitch, energy, distance, vibrate, soundproof, vibration, Alexander Graham Bell, decibels, data logger</p>	<p>associate metals with being good conductors</p> <p>To know that solar panels can be used in a circuit to create power.</p> <p>To know about the work of a historic scientist – Thomas Edison</p> <p>Vocabulary Appliances, electricity, electrical circuit, cell, wire, bulb, buzzer, danger, electrical safety, insulators, conductors, switch, series circuit, solar cell, Thomas Edison</p>
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Year 5

<p>Living things and their habitats (biology) 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</p> <p> Compare the gestation period of different animals, including humans, using secondary sources, noting any relationship between the size of the animal and/or the number of young and its gestation period, presented using line and scatter graphs.</p> <p>Vocabulary</p>	<p>Animals, including humans (biology) Describe the changes as humans develop to old age</p> <p>To know about the work of a modern scientist – Sir David Attenborough</p> <p>Vocabulary Puberty, adolescence, life expectancy, adulthood, childhood, infancy, toddler, baby, Sir David Attenborough</p>	<p>Properties and changes of materials (chemistry) 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 and show this in a Venn diagram</p> <p>Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution</p> <p>Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating</p> <p> Plan a scientific enquiry to determine the most effective process (sieve/filter/evaporate) to separate different mixtures into their component parts by making predictions and taking measurements including mass and volume to control variables</p>	<p>Earth and space (physics) 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 <i>and explain how discoveries in Ancient Egypt changed scientific understanding</i> Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky</p> <p>To know about a scientist's work - Nicolaus Copernicus (historical) OR Stephen Hawking (modern)</p> <p>Vocabulary Orbit, solar system, astronomical, planet, rotation, spherical, eclipse, lunar</p>	<p>Forces (physics) 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</p> <p> Plan a scientific enquiry to answer the question 'Does the shape of an object affect the speed at which it falls through water?' by making predictions; controlling variables; taking measurements; repeating readings as necessary; recording data in tables and scatter graphs and report and</p>
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<p>Embryo, gestation, reproduction, pollination, seed dispersal, fertiliser, seed formation, stigma, anther, soil, amphibian, insect, mammal, bird, gestation period, young</p>		<p>Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic</p> <p>Demonstrate that dissolving, mixing and changes of state are reversible changes</p> <p>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</p> <p>To know about the work of a historic scientist – Spencer Silver</p> <p>Vocabulary Solubility, transparency, electrical conductivity, transparency, thermal conductivity, evaporation, dissolve, bicarbonate of soda, filtering, melting, separate, reversible, irreversible, solution, substance, hardness, Spencer Silver, Venn diagram</p>		<p>present findings including results, conclusions and degree of trust in the data in both written and oral forms</p> <p>Recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect and show this in a labelled scientific diagram</p> <p>To know about the work of a historic scientists - Galileo Galilei & Isaac Newton</p> <p>Vocabulary Gravity, air resistance, water resistance, friction, surface, force, accelerate, decelerate, brake, mechanism, pulley, gear, spring, fulcrum, theory of gravitation, Galileo Galilei, Isaac Newton, forcemeter, scatter graph, independent variable, dependent variable, control variable, prediction, results, conclusion</p>
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Year 6

<p>Living things and their habitats (biology)</p>  <p>Describe how living things are classified into broad groups (using classification keys) according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals. Use their own classification keys to ask and answer questions</p>	<p>Animals including humans (biology)</p> <p>Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood</p> <p>Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function</p>  <p>Plan a scientific enquiry to research the answer to the question 'How much physical activity year 6 children should be doing to have a healthy</p>	<p>Evolution and inheritance (biology)</p> <p>Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago</p> <p>Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents</p> <p>Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution</p>	<p>Light (physics)</p> <p>Recognise that light appears to travel in straight lines</p> <p>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</p> <p>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</p> <p>Use the idea that light travels in straight lines to explain why shadows</p>	<p>Electricity (physics)</p> <p>Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit</p> <p>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</p>
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<p>Give reasons for classifying plants and animals based on specific characteristics</p> <p>To know about the work of a historical scientist - Carl Linnaeus</p> <p>Vocabulary Micro-organism, characteristics, species, fungi, bacteria, Linnaean system, , Carl Linnaeus</p>	<p>lifestyle?’ Consider different types of activity and the frequency/duration.</p>  <p>Plan a scientific enquiry to answer the question ‘What percentage of year 6 children lead an active lifestyle and what type of activity do they do?’ Recording data in a bar chart, presenting findings, conclusions and degree of trust in both oral and written forms and use results to ask further questions.</p> <p>Describe the ways in which nutrients and water are transported within animals, including humans</p> <p>Vocabulary Circulatory system, function, heart, blood vessels, blood, nutrients, cardiovascular, arteries, veins capillaries, atrium, ventricle</p>	<p>Design a creature for a chosen habitat with descriptions of adaptations and construct a balanced argument using scientific evidence to support or refute ideas</p> <p>To know about the work of a historical scientist – Charles Darwin</p> <p>Vocabulary Inhabit, adaptation, evolution, inheritance, Charles Darwin, genes, chromosomes</p>	<p>have the same shape as the objects that cast them</p> <p>Vocabulary Light wave, light source, concave, convex, lens, retina, cornea, iris, pupil</p>	<p>Use recognised symbols when representing a simple circuit in a diagram</p> <p>To know that the power a solar panel creates is variable depending of hours of sunlight.</p>  <p>Plan a scientific enquiry to answer the question ‘Is there a relationship between daytime light levels and energy output from solar panels?’ Showing data in line graphs and reporting conclusions, causal relationships and degree of trust in results in both oral and written forms.</p> <p>To know about the work of a historic scientist – Nikola Tesla</p> <p>Vocabulary Brightness, volume, voltage, cell, components, variable, volts, solar cell, kilowatts, Nikola Tesla</p>
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Missing from Covid-19

Living things and their habitats

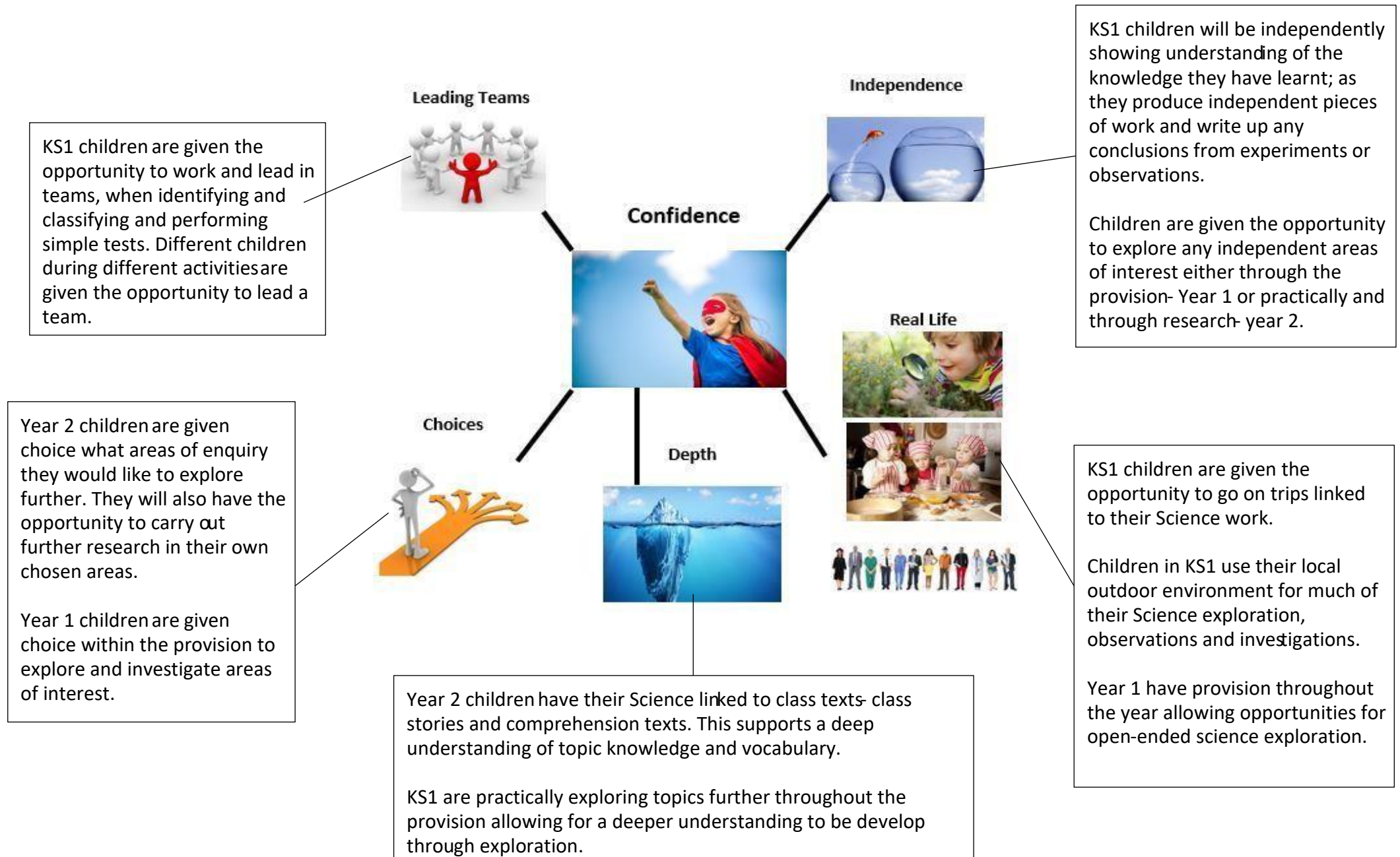
Recognise that living things can be grouped in a variety of ways (Y4)

Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment (Y4)

Recognise that environments can change and that this can sometimes pose dangers to living things (Y4)

EYFS links to intent

KS1 links to intent



LKS2 Links to Intent

Throughout LKS2 children are given the opportunity to work in teams when completing experiments and investigations. Children are given roles within the experiments. This allows different children the opportunity to lead and organise a team.

Leading Teams



Independence



Children will be given the opportunity to independently explore areas of interest with research and practical experiments.

Children during LKS2 will independently show what knowledge they have learnt by producing their findings from observations and enquiries in a variety of ways. The children will be expected to independently write up any experiment process, make predictions and conclude on what they have learnt from these.

Confidence



Real Life



Children will complete regular practical, comparative and fair tests throughout LKS2. Children will also have the opportunity to explore their local outdoor environment. Year 3 have the opportunity to plant; plants and vegetables.

Throughout LKS2 children investigations are child led, with children decided what line of enquiry the children would like to explore. There will be adult support at LKS2 to ensure their inquiry is related to the national curriculum however there is freedom of choice within an area.

Choices



Depth



Children are given the opportunity to deepen their knowledge by putting what they have learned into practice. Children will use these investigations to; make conclusions, make predictions for new values, suggest improvements and raise further questions

Further independent research will also allow children to deepen their level of knowledge on a chosen area.

Class texts; class novels and comprehension are used to link topics which support a deep understanding of the knowledge of Science topics and vocabulary.

UKS2 links to intent

Throughout UKS2, children are given the opportunity to work in teams when completing investigations and enquiries. They will also be able to lead their own comparative and fair tests.

Children are given roles within investigations which allows different children the opportunity to lead and organise their team as well as exploring different roles which may suit their knowledge and skills.

Throughout UKS2, children are given the opportunity to explore their own lines of enquiry and develop questions of interest that develop from the knowledge they have learned.

The children are given choices of how they want to record and present their findings.



Children are given the opportunity to deepen their knowledge by putting what they have learnt into practice. Children will use investigations to make predictions, draw conclusions, suggest improvements and ask further questions.

Class texts, class novels and comprehension texts are used to link topics to support a deep understanding of scientific concepts and vocabulary.

Children are given the opportunity to independently explore areas of interest with research and practical investigations.

During UKS2, children independently show what knowledge they have learned by producing their findings from investigations in a variety of ways.

The children are expected to independently write up and processes they used in their investigations, their predictions and conclude on what they have learned from their results.

Children independently record findings using scientific diagrams with labels, tables, bar charts and line graphs.

Children complete regular practical comparative and fair tests throughout UKS2.

Children will explore their outdoor environment to explore a variety of scientific topics.