Year 1

Seasonal Changes - These objectives will be taught throughout the year.

Knowledge

- To be able to observe and describe weather associated with the seasons.
- To be able to observe and describe how day length varies.
- To be able to observe changes across the four seasons.

Skills

- To be able to ask simple questions and recognise that they can be answered in different ways.
- To be able to identify objects
- To be able to perform simple tests.
- To be able to observe closely, using simple equipment.
- To be able to gather data to answer a question.

Autumn – Everyday Materials

Knowledge

- To be able to distinguish between an object and the material from which it is made from.
- To be able to identify and name a variety of everyday materials, including wood, plastic, glass, metal, water and rock.
- To be able to describe the simple physical properties of a variety of everyday materials.
- To be able to compare and group together a variety on the basis of their physical properties.

Skills

- To be able to identify and classify.
- To be able to observe carefully, using simple equipment.
- To be able to ask simple questions and recognise they can be answered in different ways.
- To be able to perform simple tests.
- To be able to record simple data in order to answer a question.
- To be able to make simple measurements with equipment.

Spring – Plants

Knowledge

- To be able to identify and name a variety of common plants, including garden plants, wild plants and trees.
- To be able to identify and describe roots.
- To be able to identify and describe flowers.
- To be able to identify and describe trunks.
- To be able to describe and identify trees by observing their leaves.

- To be able to identify and describe the basic common structure of a variety of common plants including roots, stem/trunk, leaves and flowers.

Skills

- To be able to observe closely.
- To be able to observe carefully using simple equipment.
- To be able to ask simple questions and recognise that they can be answered in different ways.
- To be able to use parts of the plant to identify and classify it.

Summer – Animals, including humans

Knowledge

- To be able to identify, name, name and draw the basic parts of the human body.
- To know which part of the body is associated with each sense.

Skills

- To be able to observe closely, using simple equipment.
- To be able to record in a table.

Year 2

Autumn - Living things and their habitats

Knowledge

- To be able to explore and compare the differences between things that are living, dead and things that have never been alive.
- To be able to identify and name a variety of plants and animals in their habitats including microhabitats.
- To be able to identify and name a variety of common animals that are birds, fish, amphibians, reptiles and mammals.
- To identify and name a variety of common animals that are carnivores, herbivores and omnivores.
- To describe how different habitats provide the basic needs of different kinds of animals, plants and how they depend on each other.
- To be able to describe and compare the structure of a variety of common animals.
- To describe how animals obtain their food from plants and other animals, using the idea of a simple food chain.

Skills

- To be able to ask questions and recognise that they can be answered in different ways.
- To be able to observe closely.
- To use observations to suggest answers to questions.
- To be able to gather and record data to help answer a question.
- To record data in a tally chart.
- To be able to record data in a bar chart.
- To be able to use secondary sources to find answers.

Animals including humans

Knowledge

- To know that animals have offspring that grow into adults
- To find out about the basic and describe the basic needs of animals including humans, for survival.
- To know the importance of humans eating the right amounts of different types of food.
- To know the importance of exercise

Skills

- To be able to use observation to suggest answers to questions.
- To be able to record data.
- To observe using simple equipment.
- To be able to perform a simple test.

Spring - Uses of Everyday Materials

Plants

Knowledge

- To observe how bulbs grow into mature plants.
- To be able to observe how seeds grow into mature plants.
- To be able to find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.

Skills

- To be able to observe closely using equipment.
- To be able to use their observations and ideas to suggest answers to questions.
- To be able to sort objects using observable features.
- To be able to perform a simple test.
- To be able to gather and record data to help in answering a question.

Summer – Materials and their properties

Knowledge

- To be able to distinguish between and object and the material from which it is made of.
- To be able to name, identify and compare a variety of everyday materials for different uses.
- To be able to find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.

Skills

- To be able to ask simple questions and recognise they can be answered in different ways.
- To be able to use their observations and ideas to suggest answers to questions.
- To be able to gather and record data to help in answering questions.
- To be able to perform simple tests.
- To be able to use simple measurements to gather data.
- To be able to use secondary sources to find answers.
- To be able to talk about what they have found out and how they found it.
- To be able to, with support, notice relationships.

Year 3

Autumn – Forces and Magnets

Knowledge

- To be able to compare how things move on different surfaces.
- To be able to compare and group together a variety of everyday materials on the basis on whether they are attracted to a magnet, and identify some magnetic materials.
- To be able to notice that some forces need contact between two objects, but magnetic forces can work at a distance.
- To know which poles will attract and those which will repel each other.
- To be able to describe magnets as having two poles.

Skills

- To be able to set up a simple fair-test.
- To be able to record findings in a bar chart.
- To be able to identify changes related to scientific ideas.
- To be able to use results to draw simple conclusions.
- To be able to provide an oral explanation of findings.
- To be able to make systematic and careful observations
- To make predictions.
- To suggest improvements.

Spring 1 – Rocks

Knowledge

- To be able to compare and group together different kinds of rocks on the basis of their appearance and physical properties.
- To be able to describe in simple terms how fossils are formed when things that have lived are trapped within rock.
- To be able to recognise that soils are made from organic rocks.

Skills

- To be able to make careful observations.
- To be able to set up simple comparative tests.
- To be able to measure using beakers and syringes.
- To be able to present information in a branching key.
- To be able to use presentations to report findings from enquiries.
- To be able to identify differences, similarities or changes related to simple scientific ideas.

Spring 2 – Plants

Knowledge

- To be able to identify and describe the function of the roots.
- To be able to investigate the ways in which water is transported within plants.
- To be able to identify and describe the function of the stem.
- To be able to identify and describe the function of the leaves.
- To explore the requirements of plants for life and growth.
- To be able to identify and describe the function of the flower.
- To explore the part the flower plays in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.

Skills

- To be able to set up a simple practical enquiry.
- To be able to make systematic and careful observations.
- To be able to use results to draw simple conclusions.
- To be able to gather and record data.
- To be able to use scientific evidence to answer questions or support their findings.
- To use labelled diagrams
- To be able to identify differences, similarities or changes related to simple scientific ideas.

Summer – Animals including humans

Knowledge

- To know that animals, including humans, need the right amounts and types of food.
- To know that humans and some animals have skeletons and muscles for support, protection and movement.
- To be able to describe the simple functions of the basic parts if the digestive system in humans.

Skills

- To be able to report in findings from enquiries.
- To be able to use evidence to answer questions.
- To be able to set up a comparative test.
- To be able to record in a table.
- To be able to identify the correct type of enquiry to answer a question.
- To suggest improvements.

Year 4

Autumn 1 – States of Matter

Knowledge

- To be able to compare and group materials together, according to whether they are solids, liquids and gases.
- To be able to observe that some materials change state when they are heated or cooled.
- To be able identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.

Skills

- To be able to set up a simple test.
- To be able to set up a fair test.
- To be able to use results (as evidence) to draw simple conclusions.
- To be able to use a data logger to take accurate measurements.
- To be able to use a thermometer to take accurate measurements.
- To be able to provide a written explanation.
- To be able to use scientific evidence to answer questions to support their findings.

Autumn 2 – Electricity

Knowledge

- To identify common appliances that run on electricity.
- To be able to construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers.
- To be able to identify whether or not a lamp will light in a simple series circuit.
- To be able to recognise some common conductors and insulators, and associated metals with being good conductors
- To be able to recognise that a switch opens and closes a circuit.

Skills

- To be able to set up a simple practical enquiry
- To make predictions
- To be able to record findings
- To be able to report a presentation of an explanation.
- To suggest improvements.

Spring 1 - Living Things and their Habitats

Knowledge

- 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 their local and wider environment

To Recognise that environments can change and that this can sometimes pose dangers to living things

Skills

- To record findings using labelled diagrams.
- To explore the use of classification keys
- To be able to compare and group together living things in a variety of ways.
- To be able to use oral/written explanations to report on findings from an enquiry.
- To be able to use evidence to support findings.
- To be able to plan the correct enquiry to answer a question.
- To recognise which secondary sources will be most useful to their research.

Spring 2 - Sound

Knowledge

- To be able to identify how sounds are made, associating some of them with vibrations.
- To be able to recognise that vibrations travel through a medium to the ear.
- To be able to find patterns between the volume of a sound and the strength of vibrations produced.
- To be able to find patterns between the pitch of a sound and the strength of vibrations produced.
- To recognise that sounds get fainter as the distance from the sound source increases.

Skills

- To be able to use scientific enquiry to answer a question.
- To be able to report on findings from an enquiry.
- To be able to identify differences, similarities or changes related to simple scientific ideas.
- To be able to make systematic and careful measurements with a data logger.
- To be able to set up a simple fair test.
- To be able to set up a comparative test.

Summer – Light

Knowledge

- To be able to recognise that they need light in order to see things and that dark is the absence of light.
- To recognise that light from the sun can be dangerous and that there are ways to protect their eyes.
- To be able to notice that light is reflected from surfaces.
- To be able to recognise that shadows are formed when the light from a light source is blocked by a solid object.
- To be able to find patterns in the way that the size of shadows change.

Skills

- To be able to record findings as drawings.
- To be able to set up a simple fair test.
- To be able to make systematic and careful observations
- To be able to measure accurately.
- To be able to record findings as a bar chart.
- To be able to make predictions for further values.
- To suggest improvements.

Year 5

Autumn – Forces

Knowledge

- To be able to understand that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.
- To be able to identify the effects of air resistance that act between moving surfaces.
- To be able to identify the effects of water resistance that act between moving surfaces.
- To be able to identify the effects of friction that act between moving surfaces.
- To be able to recognise that some mechanisms, including pulleys, allow a smaller force to have a greater effect.

Skills

- To be able to identify scientific evidence that has been used to support or refute ideas or arguments.
- To be able to take repeated accurate measurements using a stopwatch.
- To be able to explain the degree of truth in results.
- To be able to use test results to make predictions to set up further tests.
- To be able to plan a fair-test; identifying the control variables.

Earth and Space

Knowledge

- To be able to describe the movement of the Earth, and other planets, relative to the Sun in the solar system.
- To describe the movement of the Moon relative to the Earth.
- To be able to describe the Sun, Earth and Moon as approximately spherical bodies.
- To be able to use the idea of the Earth's rotation to explain day and night and the apparent movement of the Sun across the sky.

Skills

- To be able to plan a scientific enquiry to answer a question.
- To be able to report a presentation of an explanation.

Spring – Living things and their habitats

Knowledge

- To describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird.
- To be able to describe the life production process of reproduction in some plants.

Skills

- To be able to plan the correct enquiry to answer a question.
- To be able to recognise which secondary sources will be most useful to their research.
- To be able to use scientific diagrams and labels.
- To be able to explain findings.

Summer 1 – Properties and changes of materials

Knowledge

- To be able to compare and group together every day materials based on evidence from comparative and fair tests, including their conductivity and heat.
- To be able to give reasons, based on evidence from comparative and fair tests, for the particular uses of materials.
- To be able to understand that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution.
- To be able to use knowledge of solids, liquids and gases to decide how mixtures might be separated including through filtering, sieving and evaporating.
- To be able to demonstrate that dissolving, mixing and changes of state are reversible changes.
- Understand that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution.
- To know that some changes result in the formation of new materials and that this kind of change is not usually reversible.

Skills

- To take accurate measurements using a data-logger.
- To take accurate measurements using a thermometer,
- To be able to record data in a line graph.
- To be able to use results to make predictions to set up further comparative and fair tests.
- To be able to report findings from enquiries, including conclusions, causal relationships and explanations.
- To plan a scientific enquiry that will answer a question.
- To be able to recognise control variables when planning a fair test.
- To be able to evaluate an enquiry in terms of the amount of trust one can have in it.

Summer 2 - Animals including humans

Some of these knowledge objectives will be taught during RSE lessons and the living things and their habitats unit throughout the year.

- To be able to describe the changes as humans develop from birth to old age.
- To be able to describe the life process of reproduction in some animals.

Year 6

Autumn

Summer 1 – Electricity and Light

Knowledge

- To be able to recognise symbols when representing a simple circuit in a diagram.
- To be able 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 be able to compare reasons for variations in how components function, including the brightness of bulbs, loudness of buzzers and the on/off position of switches.
- To understand that light appears to travel in a straight line.
- To be able to use the idea that light travels in straight lines to explain that objects can be seen because they give out or reflect light into our eyes.
- To be able to 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.
- To use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.

Skills

- To be able to take repeat measurements of data with precision using a data logger.
- To be able to explain the degree of trust can be had in results.
- To be able to plan a fair-test by recognising and controlling the control variables.
- To be able to use predictions to set up further fair tests.
- To be able to use scientific evidence to support or refute an idea.
- To be able to plan a scientific enquiry to answer a question.

Spring – Evolution and Inheritance

Knowledge

- To be able to recognise that living things have changed over time and that fossils provide information about things that inhabited the Earth millions of years ago.
- To be able to recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents.
- To be able to identify how animals are adapted to suit their environment in different ways and that adaptation may lead to evolution.
- To be able to identify how plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.
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Skills

- To be able to identify scientific evidence that has been used to support or refute ideas or arguments.
- To be able to plan an enquiry that will answer a question.
- To be able to record data in a table.
- To be able to measure with a data logger.
- To be able to report a presentation of an explanation.

Summer 1 – Living things and their habitats

Knowledge

- To be able to describe how living things are classified into broad groups according to common observable characteristics and based on similarities and difference, including micro-organisms, plants and animals.
- To be able to give reasons for classifying plants and animals based on their characteristics.

Skills

- To be able to make a key to classify plants
- To be able to identify scientific evidence that has been used to support or refute ideas or arguments.

Summer 2 – Animals including humans

Knowledge

- To be able to name the main parts of the human circulatory system, and explain the functions of the heart, blood vessels and blood.
- To describe the ways in which nutrients and water are transported within animals, including humans.
- To recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function.

Skills

- To be able to plan pattern-seeking enquiry.
- To be able to report on causal relationships.
- To be able to record results using a line graph.