

Science Learning Journey - EY

THE
THINKING
SCHOOLS
FEDERATION

Spring term:

Forces

- Explore how to change how things work
- Explore how the wind can move objects
- Explore how objects move in water

Animals excluding humans

- Name & describe animals that live in different habitats
- Describe different habitats

Seasonal changes

- Play & explore outside in all seasons and in different weather
- Observe living things throughout the year

Autumn term:

Humans

- Describe people who are familiar to them
- Learn about how to take care of themselves

Sound

- Listen to sounds outside and identify the source
- Make sounds

Seasonal changes

- Play & explore outside in all seasons & in different weather
- Observe living things throughout the year

Materials, including changing materials

- Explore a range of materials, including natural materials
- Make objects from different materials, including natural materials
- Observe, measure & record how materials change when heated & cooled
- Compare how materials change over time & in different conditions

Autumn term:

Sound

- Listen to sounds
- Make sounds

Humans

- Learn about the life cycle of humans
- Learn about how to take care of themselves
- Learn about their senses

Light

- Explore light sources
- Shine light on or through different materials

Summer term:

Animals excluding humans

- Name & describe animals that live in different habitats
- Describe different habitats

Living things & their habitats

- Explore the plants in the surrounding natural environment
- Explore the animals in the surrounding natural environment
- Explore plants & animals in a contrasting natural environment

Seasonal changes

- Play & explore outside in all seasons & in different weather
- Observe living things throughout the year

Light

- Explore shadows
- Explore rainbows

Earth & Space

- Learn about the Solar System and stars
- Learn about space travel

Summer term:

Plants

- Grow plants

Materials, including changing materials

- Explore a range of materials
- Shape and join materials
- Combine and mix ingredients
- Change materials by heating and cooling, including cooking

Forces

- Feel forces
- Explore how things work
- Explore how objects/materials are affected by forces

Electricity- Explore how things work

- Identify electrical devices
- Use battery-powered devices

Spring term:

Animals, excluding humans

- Learn about the life cycles of animals
- Compare adult animals to their babies
- Observe how baby animals change over time

Living things & their habitats

- Explore the surrounding natural environment
- Explore natural objects from the surrounding environment

Plants

- Grow plants

Characteristics of effective learning to be developed throughout the Key Stage:

Finding and exploring

- Showing curiosity
- Using their senses

Playing with what they know

- Representing their experiences through play

Being willing to have a go

- Initiating activities

Being involved and concentrating

- Paying attention to details

Having their own ideas

- Thinking of ideas

Making links

- Making Predictions
- Making links and noticing patterns in their experience
- Testing their ideas
- Developing ideas of grouping, sequencing and cause and effect

Choosing ways to do things

- Planning, making decisions about how to approach a task, solve a problem and reach a goal
- Checking how well their activities are going
- Changing strategy as needed
- Reviewing how well the approach worked
- Communicating their thinking

Reception

Nursery

Science Learning Journey - KS1

Scientific Enquiry Skills to be developed throughout Year Two:

- Ask simple questions that can be tested.
- Know that questions can be answered in different ways.
- Plan a comparative or fair test.
- Make a prediction with an explanation
- Select from a wider range of equipment to use in an investigation.
- Make relevant observations throughout an investigation.
- Draw and label a diagram.
- Use tables to record evidence.
- Gather & display evidence in various ways, with support
- Write a simple conclusion using evidence.
- Recognise patterns that relate to scientific ideas.
- Explain how an investigation could be extended.

Scientific Enquiry Skills to be developed throughout Year One:

- Begin to ask questions that can be tested
- Explain if a question can be answered practically or not
- Say what might happen in an experiment
- Carry out simple tests with support.
- Make relevant observations including non-standard measurements
- Choose appropriate equipment & follow instructions on how to use it.
- Gather and record data to help them answer questions
- Use labels & drawings to present evidence
- Identify and classify things with support
- Use simple data and ideas to answer questions
- Recognise the link between cause and effect
- Review work, explain some of the difficulties and suggest changes that could be made

Spring term:

Living things and their habitats

- Explore and compare the differences between things that are living, dead, & 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 animals & plants & how they depend on each other.
- Identify & name a variety of plants & animals in their habitats
- Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain.
- Identify & name different sources of food.

Autumn term:

Animals inc. humans (Recap & build upon Animals inc. humans Y1)

- Find out about and describe the basic needs of animals, including humans, for survival (water, food, air).
- Describe the importance for humans of exercise, eating the right amounts of different types of foods and hygiene

Materials (Recap & build upon Materials Y1)

- Identify and compare the suitability of a variety of everyday materials for particular uses.
- Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting & stretching

Autumn term:

Animals inc. humans (Recap & build upon EY learning)

- Identify, name, draw and label the basic parts of the human body
- Say which part of the body is associated with each sense

Seasonal changes

- Observe changes across the four seasons.

Materials (Recap & build upon EY learning)

- Distinguish between an object and the material from which it is made.
- Identify and name a variety of everyday materials
- 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

Summer term:

Animals inc. humans

- Notice that animals, including humans, have offspring which grow into adults.

Plants (Recap & build upon Plants Y1)

- 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.

Summer term:

Animals inc. humans

- Identify and name a variety of common animals
- Identify and name a variety of herbivores, carnivores and omnivores
- Describe and compare the structure of a variety of common animals

Seasonal changes

- Observe changes across the four seasons.
- Observe and describe weather associated with the seasons and how day length varies.

Spring term:

Seasonal changes (Recap & build upon learning from YR)

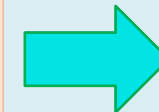
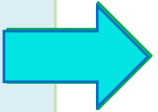
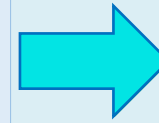
- Observe changes across the four seasons.
- Observe and describe weather associated with the seasons and how day length varies.

Plants (Recap & build upon EY learning)

- Identify and name a variety of wild and garden plants.
- Identify and describe the basic structure of a variety of

Year
Two

Year
One



Science Learning Journey – Year Three

THE
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Scientific Enquiry Skills to be developed throughout Year Three:

- Ask relevant scientific questions.
- Set up a simple enquiry to explore a scientific question.
- Set up a test to comparative test.
- Set up a fair test and explain why it is fair.
- Make a prediction with some scientific vocabulary.
- Make careful and accurate observations, including the use of standard units.
- Use equipment, e.g. thermometers
- Gather, record, classify and present data in different ways to answer scientific questions.
- Use diagrams, keys, bar charts and tables; using scientific language.
- Use findings to report in different ways, including oral and written explanations.
- Use straightforward scientific evidence to answer questions or to support findings.
- Identify differences, similarities and changes related to an enquiry.
- Suggest improvements to an investigation.
- Suggest new questions and predictions for setting up further tests.

Year
Three

Summer term:

Plants (Recap & build upon Plants Y2)

- Identify and describe the functions of different parts of flowering plants.
- Explore the requirements of plants for life and growth and how they vary from plant to plant.
- Investigate the way in which water is transported within plants.
- Explore the part that flowers play in the life cycle of flowering plants.

ROCKS (Recap & build upon Materials Y2)

- Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties.
- Describe in simple terms how fossils are formed when things that have lived are trapped within rock.
- Recognise that soils are made from rocks and organic matter.

Spring term:

Forces & Magnets (Recap & build upon uses of Materials Y2)

- Compare how things move on different surfaces.
- Notice that some forces need contact between two objects, but magnetic forces can act at a distance.
- Observe how magnets attract or repel each other and attract some materials and not others.
- Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials.
- Describe magnets as having two poles.
- Predict whether two magnets will attract or repel each other, depending on which poles are facing.

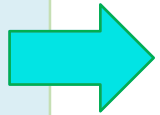
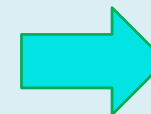
Autumn term:

Animals including humans (Recap & build upon Animals inc. humans Y2)

- Identify that animals, including humans, need the right types and amount of nutrition,
- Identify that humans and some other animals have skeletons and muscles for support, protection and movement.

Light & Shadows

- Recognise that they need light in order to see things
- 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.



Science Learning Journey – Year Four

Scientific Enquiry Skills to be developed throughout Year Four:

- Ask a range of relevant scientific questions for different types of enquiry.
- Suggest why a particular type of enquiry should be used to answer a question.
- Identify and manage the different variables.
- Make a prediction using previous knowledge and real-life experiences.
- Choose to make a series of observations that will add to the quality of evidence I collect.
- Select and accurately use a range of equipment repeatedly and with care.
- Select the most appropriate way to present evidence I have collected.
- Record data and results of increasing complexity using scientific diagrams, classification keys, tables, bar and line graphs and models.
- Explain how scientific evidence supports a conclusion.
- Make a comparative statement, describing relationships between factors being investigated.
- Recognise some of the limitations of my evidence and suggest why it should not be trusted.
- Use test results to set up further investigations.

Year
Four

Summer term:

Electricity

- Identify common appliances that run on electricity.
- Construct a simple series electrical circuit, identifying & naming its basic parts
- Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery.
- Recognise that a switch opens and closes a circuit & associate this with whether or not a lamp lights in a simple series circuit.
- Recognise some common conductors and insulators, & associate metals with being good conductors.

Spring term:

Sound

- Identify how sounds are made, associating some with something vibrating.
- Recognise that vibrations from sounds travel through a medium to the ear.
- Find patterns between the pitch of a sound & features of the object that produced it.
- Find patterns between the volume of a sound & the strength of the vibrations that produced it.
- Recognise that sounds get fainter as the distance from the sound source increases.

States of Matter (Recap & build upon Materials Y2)

- 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 °C.
- Identify the part played by evaporation and condensation in the water cycle

Autumn term:

Living things & their habitats (Recap & build upon Plants Y3 and Living things & their habitats Y2)

- Recognise that living things can be grouped in a variety of ways.
- Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment.
- Recognise that environments can change and that this can sometimes pose dangers to living things.

Animals including humans (Recap & build upon Animals inc. humans Y3)

- 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.

Scientific Enquiry Skills to be developed throughout Year Five:

- Begin to plan different types of scientific enquiry.
- Explain why a particular type of enquiry should be used to answer a question, with support
- Control variables in a range of enquiries.
- Make a prediction using my scientific knowledge and real-life experiences.
- Take measurements with increasing accuracy using a range of equipment.
- Take repeat readings when appropriate.
- Begin to record data and results using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs of my choice.
- Display and present key findings from enquiries.
- Use my scientific knowledge to answer questions or support findings
- Explain causal relationships in an enquiry and with support, consider limitations.
- Begin to relate the outcome from an enquiry to scientific knowledge in order to state whether evidence supports or refutes an argument or theory.
- Beginning to use the outcome of test results to make predictions and set up a further comparative fair test.

Year
Five

Summer term:

Living things & their habitats (Recap & build upon Plants Y3 and Living things & their habitats Y4)

- 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.

Animals including humans (Recap & build upon Animals inc. humans Y4)

- Describe the changes as humans develop to old age.

Spring term:

Forces (Recap & build upon Forces & Magnets Y3)

- Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.
- Identify the effects of air resistance, water resistance and friction, that act between moving surfaces.
- Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.

Properties & Changes of Materials (Recap & build upon States of Matter Y4)

- Compare and group together everyday materials on the basis of their properties
- Know that some materials will dissolve in liquid to form a solution, & describe how to recover a substance from a solution.
- Use knowledge of solids, liquids & gases to decide how mixtures might be separated
- Give reasons, based on evidence from comparative & fair tests, for the particular uses of everyday materials
- Demonstrate that dissolving, mixing and changes of state are reversible changes.
- Explain that some changes result in the formation of new materials, & that this kind of change is not usually reversible

Autumn term:

Space & Earth (Recap & build upon Seasonal changes Y1)

- Describe the movement of the Earth, and other planets, relative to the Sun in the solar system.
- Describe the movement of the Moon relative to the Earth.
- Describe the Sun, Earth and Moon as approximately spherical bodies.
- Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.



Science Learning Journey – Year Six

Scientific Enquiry Skills to be developed throughout the Key Stage:

- Read, spell and pronounce scientific vocabulary accurately
- Plan different types of scientific enquiry.
- Independently explain why a particular type of enquiry should be used to answer a question.
- Recognise and control variables in a range of enquiries.
- Make a prediction using scientific knowledge and real-life experiences.
- Measure accurately and precisely using a range of equipment.
- Identify situations in which taking repeat readings will improve the quality of evidence.
- Record data and results using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.
- Display and present key findings from enquiries orally and in writing.
- Use scientific evidence to answer questions or support findings
- Explain causal relationships in an enquiry and explain limitations
- Relate the outcome from an enquiry to scientific knowledge in order to state whether evidence supports or refutes an argument or theory.
- Use the outcome of test results to make predictions and set up a further comparative fair test.

Year Six

Summer term:

Evolution (Recap & build upon Rocks Y3)

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

Electricity (Recap & build upon Electricity Y4)

- Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit.
- Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches.
- Use recognised symbols when representing a simple circuit in a diagram.

Spring term:

Living things & their habitats (Recap & build upon Living things & their habitats, Y4 and Y5)

- Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences
- Give reasons for classifying plants and animals based on specific characteristics.

Animals including humans (Recap & build upon Animals including humans Y5)

- Identify & name the main parts of the human circulatory system, & describe the functions of the heart, blood vessels & blood.
- Recognise the impact of diet, exercise, drugs & lifestyle on the way their bodies function.
- Describe the ways in which nutrients and water are transported within animals, including humans.

Autumn term:

Light (Recap & build upon Light Y3)

- 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.

THE THINKING SCHOOLS FEDERATION

