ST AIDAN'S
CATHOLIC PRIMARY SCHOOL
Learning and growing together, inspired by the love of Jesus

Science

Purpose of the document

This document is to help teachers plan a sequenced Science curriculum. It will include a map that shows which years topics are taught, a guide for each year group and assessment documents.

For each year group you will find:

- A list of the topics to be taught
- A cover page for each topic
- A list of the national curriculum objectives linked to the topic
- Key scientific skills linked to the topic
- A structured sequence of lesson objectives for each topic
- Key vocabulary for each topic
- Some potential lesson ideas for each objective (these are not prescriptive and teachers can teach the objective as they deem appropriate)

Year 1

Topics

- Everyday Materials
- Animals including humans (human focus)
- Animals including humans (animal focus (long topic))
- Seasonal changes
- Plants

Everyday Materials

National curriculum

- 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.

Sequence of lessons

Lesson	**Objective**
1	Investigate a range of objects and describe features noting new vocabulary.
2	Distinguish between the object and it's material.
3	Sort and group materials based on properties
4	Experiment: Describe and test the physical properties of materials. (Make an umbrella for Ted)
5	Describe the physical properties of everyday materials (using experiment as evidence)

Key vocabulary

Object, material, wood, plastic, glass, metal, water, rock, brick, paper, fabric, elastic, foil, card/cardboard, rubber, wool, clay, hard, soft, stretchy, stiff, bendy, floppy, waterproof, absorbent, breaks/tears, rough, smooth, shiny, dull, see through, not see through

Animals including humans

My body

National curriculum

- identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.

Sequence of lessons

Lesson	**Objective**
1	Identify and name basic parts of the human body
2	Compare differences in basic body parts whilst identifying and naming
3	Senses walk: Use the five senses and begin to identify the body part linked with each sense
4	Senses discovery test: Use the five senses and their associated body parts
5	Say which part of the body is associated with each sense

Key vocabulary

Senses, touch, see, smell, taste, hear, fingers, skin, eyes, nose, ear and tongue

Animals including humans

Animals

National curriculum

- 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
- describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets)

Sequence of lessons

Lesson	Objective
1	Identify and name a variety of common animals
2	Learn new vocabulary: fish, amphibians, reptiles, birds and mammals
3	Group animals according to whether they are: fish, amphibians, reptiles, birds and mammals
4	Safari park / zoo trip: identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals.
5	Learn new vocabulary: carnivores, herbivores and omnivores
6	Apply knowledge of what different animals at the safari park / zoo were eating. Match animal to it's food
7	Group animals according to whether they are: carnivores, herbivores and omnivores
8	Describe the structure of a variety of common animals
9	Compare the structure of a variety of common animals by grouping according to similarities
10	Apply knowledge from all objectives to write a short descriptive report based on a favourite animal

Key vocabulary

Head, body, eyes, ears, mouth, teeth, leg, tail, wing, claw, fin, scales, feathers, fur, beak, paws, hooves, carnivores, herbivores and omnivores

Seasonal changes

National curriculum

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

Sequence of lessons

Lesson	Objective
1	During early Autumn term: Record our tree in pictures and words. Record the daily weather and sunset/sunrise times
2	During late Autumn term: Record our tree in pictures and words. Record the daily weather and sunset/sunrise times
3	During Spring term: Record our tree in pictures and words. Record the daily weather and sunset/sunrise times
4	During Summer term: Record our tree in pictures and words. Record the daily weather and sunset/sunrise times
5	Observe seasonal changes (Using data from the year)

Key vocabulary

Weather, sunny, rainy, windy, snowy, seasons, winter, summer, spring, autumn, sun, sunrise, day length and sunset

Plants

National curriculum

- 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.

Sequence of lessons

Lesson	Objective
1	Name a variety of common wild plants from samples and cuttings
2	Learn new vocabulary: deciduous and evergreen
3	Wetlands wildflower & tree hunt (Magnifying glasses and extract samples to press)
4	Identify the basic structure of common flowering plants
5	Label and describe the structure of real life samples of common flowering plants

Key vocabulary

Leaf, flower, blossom, petal, fruit, berry, root, seed, trunk, branch, stem, bark, stalk, bud

Year 2

Topics

- Everyday materials
- Living things and their habitats (long topic)
- Animals including humans – Life cycles and being healthy
- Plants (long topic)

Everyday Materials

National curriculum

- 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.

Sequence of lessons

Lesson	**Objective**
1	Identify uses of materials
2	Find materials in our local area
3	Compare the suitability of materials
4	Experiment to see which materials change shape
5	Know the process of recycling

Key vocabulary

Year 1 plus opaque, transparent, translucent, reflective, non-reflective, rigid, shape, push, pull, twist, squash, bend, stretch

Living things and their habitats

National curriculum

- 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.

Sequence of lessons

Lesson	Objective
1	Classify living and nonliving
2	Classify alive, dead or never alive
3	Fieldtrip- find living, dead or never alive in my local area
4	Investigate a microhabitat
5	Research British habitats
6	Group living things into their British habitat
7	Research facts about a world habitat
8	Classify animals based on their world habitat
9	Understand how some living things depend on each other
10	Produce a food chain

Key vocabulary

Living, dead, never been alive, suited, suitable, basic needs, food, food chain, shelter, move, feed, woodland, pond, urban, coast, ocean, arctic, rainforest, desert

Life cycles and survival

National curriculum

- 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.

Sequence of lessons

Lesson	Objective
1	Human life cycle stages
2	Animal life cycles
3	Predict and investigate which age is fastest
4	Know how to look after pets
5	Know how to be healthy (hygiene and effects of exercise)

Key vocabulary

offspring, reproduction, growth, child, young, old (examples of young and old stages e.g. chick/hen), exercise, heartbeat, breathing, hygiene, germs, disease, food types (eg meat, pasta etc)

Plants

National curriculum

- 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.

Sequence of lessons

Lesson	Objective
1	Observe plants
2	Plant a seed and a bulb
3	Investigation- different variables for plant germination/growth
4	Life cycles of a plant
5	Finding plants in my local area
6	What do plants need to germinate (conclusion of investigation)
7	Transplanting a seed to a new pot
8	Which plants do we eat?
9	Plant dependency
10	How different plants grow

Key vocabulary

Year 1 plus- light, shade, sun, warm, cool, water, grow, healthy

Year 3 topics

- Rocks
- Forces
- Animals including humans
- Light
- Plants

Rocks

National curriculum

- 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.

Sequence of lessons

Lesson	Objective
1	Walt: compare and group together different kinds of rocks on the basis of their appearance and simple physical properties
2	Walt: identify property of rocks
3	Walt: understand how a fossil is formed.
4	Walt: research different soil types
5	Walt: investigate the permeability of soil
6	Walt: investigate the permeability of soil, children to complete end of topic assessment

Key vocabulary

Rock, stone, pebble, boulder, grain, crystal, layers, hard, soft, texture, absorb water, soil, fossil, marble, chalk, granite, sandstone, slate, soil, peat, sandy, chalky, clay

Forces-Magnets

National curriculum

- 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.

Sequence of lessons

Lesson	Objective
1	Walt: to understand a force
2	Walt: to compare how things move on different surfaces
3	Walt: to notice that some forces need contact between two objects, but magnetic forces can act at a distance
4	Walt: to describe magnets as having two poles
5	Walt: to predict whether two magnets will attract or repel each other, depending on which poles are facing.
6	Walt: to 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

Key vocabulary

Force, push, pull, twist, contact force, non-contact force, magnetic force, magnet, strength, bar magnet, ring magnet, button magnet, horseshoe magnet, attract, repel, magnetic material, metal, iron, steel, poles, north pole, south pole

Animals including humans-

Skeletons and nutrition

National curriculum

- 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
- identify that humans and some other animals have skeletons and muscles for support, protection and movement.

Sequence of lessons

Lesson	Objective
1	Walt: to understand types of nutrition
2	Walt: 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
3	Walt: understand skeletons
4	Walt: label the human skeleton
5	Walt: identify that humans and some other animals have skeletons and muscles for support, protection and movement.
6	Walt: investigate muscles

Key vocabulary

Nutrition, nutrients, carbohydrates, sugars, protein, vitamins, minerals, fibre, fat, water, skeleton, bones, muscles, support, protect, move, skull, ribs, spine, joints

Light

National curriculum

- 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.

Sequence of lessons

Lesson	Objective
1	Walt: recognise that they need light in order to see things and that dark is the absence of light
2	Walt: understand reflective surfaces
3	Walt: notice that light is reflected from surfaces
4	Walt: recognise that light from the sun can be dangerous and that there are ways to protect their eyes
5	Walt: recognise that shadows are formed when the light from a light source is blocked by an opaque object
6	Walt: find patterns in the way that the size of shadows change.

Key vocabulary

Light, light source, dark, absence of light, transparent, translucent, opaque, shiny, matt, surface, shadow, reflect, mirror, sunlight, dangerous

Plants

National curriculum

- 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 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.

Sequence of lessons

Lesson	Objective
1	Walt: understand parts of a plant
2	Walt: identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers
3	Walt: understand what plants need to grow
4	Walt: plant seeds
5	Walt: 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
6	Walt: make observations on the seeds planted in different conditions
7	Walt: investigate the way in which water is transported within plants
8	Walt: explore the part of the flower in the life cycle of a flowering plant
9	Walt: understand pollination
10	Walt: research seed formation and seed dispersal.

Key vocabulary

Photosynthesis, pollen, insect/ wind pollination, seed formation, seed dispersal, wind dispersal, animal dispersal, water dispersal

Year 4 topics taught

- Electricity
- Living things and their habitats
- States of matter
- Teeth and digestion
- Sound

Electricity

National curriculum

- identify common appliances that run on electricity
- construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers
- identify whether or not a lamp will light in a simple 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 and associate this with whether or not a lamp lights in a simple series circuit
- recognise some common conductors and insulators, and associate metals with being good conductors.

Sequence of lessons

Lesson	**Objective**
1	I can explain ways that electricity is generated.
2	I can identify electrical appliances and the types of electricity use.
3	I can identify complete and incomplete circuits.
4	I can identify and sort materials into electrical conductors or insulators**.**
5	I can explain how a switch works and why they are needed.
6	I can records and report on an investigation.

Key vocabulary

Electricity, electrical appliance, device, mains, plug, electrical circuit, complete circuit, component, cell, battery, positive, negative, connect/ connections, loose connection, short circuit, crocodile clip, bulb, switch, buzzer, motor, conductor, insulator, metal, non-metal, symbol

Living things and their habitats - Classification

National curriculum

- 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.

Sequence of lessons

Lesson	Objective
1	**I can group living things in a variety of ways**
2	**I can generate questions to use in a classification key**
3	**I can use a key to identify invertebrates**
4	**I can create a classification key**
5	**I can recognise positive and negative changes to the local environment**
6	**I can describe environmental dangers to endangered species**

Key vocabulary

Classification, classification keys, environment, habitat, human impact, positive, negative, migrate, hibernate

States of matter

National curriculum

- compare and group materials together, according to whether they are solids, liquids or gases
- observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C)
- identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.

Sequence of lessons

Lesson	**Objective**
1	I can sort and describe materials.
2	I can investigate gases and explain their properties.
3	I can investigate materials as they change state.
4	I can explore how water changes state.
5	I can investigate how water evaporates.
6	I can identify and describe the different stages of the water cycle.

Key vocabulary

Solid, liquid, gas, state change, melting, freezing, melting point, boiling point, evaporation, temperature, water cycle

Animals including humans - Teeth and digestion

National curriculum

- 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.

Sequence of lessons

Lesson	Objective
1	I can identify and name parts of the human digestive system.
2	I can explain the functions of the digestive system.
3	I can identify the types and functions of teeth.
4	I can ask scientific questions and choose a scientific enquiry to answer them.
5	I can make careful observations and record my results.
6	I can construct and interpret food chains.

Key vocabulary

Digestive system, digestion, mouth, teeth, saliva, oesophagus, stomach, small intestine, nutrients, large intestine, rectum, anus, teeth, incisor, canine, molar, premolars, herbivore, carnivore, omnivore, producer, predator, prey, food chain

Sound

National curriculum

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

Sequence of lessons

Lesson	Objective
1	I can describe and explain sound sources.
2	I can explain how different sounds travel.
3	I can explore ways to change the pitch of a sound.
4	I can investigate ways to absorb sound.
5	I can make a musical instrument play different sounds.
6	

Lesson ideas

Key vocabulary

Sound, source, vibrate, vibration, travel, pitch, high, low, volume, faint, loud, insulation

Year 5 topics taught

- **Forces**
- **Earth and Space**
- **Animal life cycles**
- **Human and plant life cycles**
- **Properties of materials and their changes**

Forces

National curriculum

- 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.

Sequence of lessons

Lesson	**Objective**
1	explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object
2	explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object
3	identify the effects of air resistance
4	identify the effects of water resistance
5	identify the effects of friction, that act between moving surfaces
6	recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.
7	recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.

Key vocabulary

Force, gravity, earth, air resistance, water resistance, friction, mechanisms, simple machines, levers, pulleys, gears

Earth and Space

National curriculum

- 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.

Sequence of lessons

Lesson	Objective
1	Describing the Sun, Earth and Moon as approximately spherical bodies
2	Describing the movement of the Earth, and other planets, relative to the Sun in the solar system (name the planets of the Solar System)
3	Describing the movement of other planets, relative to the Sun in the solar system Identifying scientific evidence that has been used to support or refute ideas or arguments
4	Explain day and night and the apparent movement of the Sun across the sky
5	Investigate night and day in different parts of the Earth. Report and show findings (working scientifically)
6	Describing the movement of the Moon relative to the Earth by explaining how the Moon orbits the Earth.

Key vocabulary

Earth, sun, moon, Mercury, Venus, Jupiter, Saturn, Uranus, Neptune, spherical, solar system, rotates, star, orbit, planets

Living things and their habitats-

Animal life cycles

National curriculum

- 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.

Sequence of lessons

Lesson	**Objective**
1	To describe the life process of reproduction in plants
2	To describe the life cycles of a bird
3	To describe the life cycles of an amphibian and an insect (explore metamorphosis and compare)
4	To describe the life cycle of mammals
5	Make comparisons between life cycles of different animals
6	To research and find out about a animal behaviourist/ science eg David Attenborough / Jane Goodall

Lesson ideas

Key vocabulary

Life cycle, reproduce, sexual, sperm, fertilises, egg, live young, metamorphosis, asexual, plantlets, runners, bulbs, cuttings

Animals including humans - Changes in humans

National curriculum

- describe the changes as humans develop to old age.

Sequence of lessons

Lesson	**Objective**
1	Describe changes to humans from birth to old age
2	Describe the physical changes which occur during puberty
3	Describe and explain the menstruation cycle
4	Describe growth of babies
5	Describe changes in old age
6	

Lesson ideas

Key vocabulary

Puberty: vocabulary to describe sexual characteristics

Properties of materials and their changes

National curriculum

- 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
- know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution
- use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating
- give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic
- demonstrate that dissolving, mixing and changes of state are reversible changes
- explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda.

Sequence of lessons

Lesson	**Objective**
1	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
2	Investigate the properties of materials for thermal conductors and insulators
3	Investigate the properties of materials and conductivity
4	know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution
5	use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating
6	Compare, present results and draw conclusions from investigations
7	demonstrate that dissolving, mixing and changes of state are reversible changes
8	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.
9	Assessment and review
10	

Key vocabulary

Thermal, electrical, insulator, conductor, change of state, mixture, dissolve, solution, soluble, insoluble, filter, sieve, reversible/ non-reversible, burning, rusting, new material

Year 6 topics taught

- **Electricity**
- **Light**
- **Evolution**
- **Living things and their habitats - Classification**
- **Animals including humans- circulatory system**

Electricity

National curriculum

- 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.

Sequence of lessons

Lesson	Objective
1	• Identify scientific evidence that has been used to support or refute ideas or arguments.
2	• Use recognised symbols when representing a simple circuit in a diagram.
3	• Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit.
4	• 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 • Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.
5	• 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. • Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs. • Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations.
6	• 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. • Using test results to make predictions to set up further comparative and fair tests.

Key vocabulary

Electricity, Electrical wires. crocodile clips, short and long wires, Bulbs, Bulb holders, Batteries, Battery holders (single and double), Buzzers, Motors, Switch(es), circuit(s), lamp, variation, enquiry, key(s)


Light

National curriculum

- 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.

Sequence of lessons

Lesson	Objective
1	• To recognise that light appears to travel in straight lines. • To 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. • 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.
2	• To recognise that light appears to travel in straight lines by investigating the angles of incidence and reflection. • To 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 by creating a periscope and explaining how it works. • 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 by creating a periscope and explaining how it works.
3	• To recognise that light appears to travel in straight lines by investigating refraction.
4	• 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. • Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary by investigating the relationship between wire length and the brightness of bulbs or the loudness of buzzers.
5	• To 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 by investigating how we see colours. • 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 by investigating how we see colours.
6	• To use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them by performing a shadow puppet show about Isaac Newton. • To identify scientific evidence that has been used to support or refute ideas or arguments by performing a shadow puppet show about Isaac Newton.

Key vocabulary

As for year 3 plus- straight lines, light rays

Evolution and inheritence

National curriculum

- 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.

Sequence of lessons

Lesson	Objective
1	• Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents in the context of inheritance.
2	• Identify how animals and plants are adapted to suit their environment in different ways in the context of environmental variation.
3	• Identifying scientific evidence that has been used to support or refute ideas or arguments; Identify how adaptation may lead to evolution by examining the theories of evolution constructed by Darwin and Wallace.
4	• Identifying scientific evidence that has been used to support or refute ideas or arguments; Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago in the context of the evolution of plants and animals.
5	• Identifying scientific evidence that has been used to support or refute ideas or arguments; Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago in the context of the evolution of human beings.
6	• Identify how adaptation may lead to evolution by examining the advantages and disadvantages of specific adaptations and the role of human intervention in the process of evolution.

Key vocabulary

Offspring, sexual reproduction, vary, characteristics, suited, adapted, environment, inherited, species, fossils

Living things and their habitats-

Classification

National curriculum

- describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals
- give reasons for classifying plants and animals based on specific characteristics.

Sequence of lessons

Lesson	Objective
1	• To give reasons for classifying plants and animals based on specific characteristics in the context of sorting and grouping animals for a zoo.
2	• To describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals by finding out about the Linnaean System of classification.
3	• To describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals by identifying the characteristics of mammals, birds, insects, reptiles, amphibians, fish, arachnids, annelids, crustaceans, echinoderms and molluscs. • To give reasons for classifying plants and animals based on specific characteristics by exploring unusual creatures and designing their own curious creature.
4	• To describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals by exploring helpful and harmful micro-organisms.
5	• To describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals I can identify the characteristics of different types of micro-organisms.
6	• To describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals by grouping organisms found in the local habitat. • To give reasons for classifying plants and animals based on specific characteristics by creating a field guide to the organisms found in the local habitat.

Key vocabulary

Vertebrates, fish, amphibians, reptiles, birds, mammals, invertebrates, insects, spiders, snails, worms, flowering and non-flowering

Animals including humans -

Cirulatory system and keeping healthy

National curriculum

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

Sequence of lessons

Lesson	Objective
1	• To identify and name the main parts of the human circulatory system by recalling prior knowledge of systems in the human body and labelling a diagram.
2	• To describe the functions of the heart, blood vessels and blood by investigating how the different parts of the circulatory system work.
3	• To describe the functions of the heart, blood vessels and blood by investigating how the different parts of the circulatory system work through creating a quiz game.
4	• To describe the ways in which nutrients and water are transported within animals, including humans in the context of the human body.
5	• To recognise the impact of diet and exercise on the way their bodies function by describing the effects of a healthy lifestyle.
6	• To plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary taking measurement with increasing accuracy and precision, taking repeat readings when appropriate by creating an enquiry that compares and categorises different forms of exercise and by taking accurate pulse measurements to gather data. • To record data and results of increasing complexity using classification keys, tables, scatter graphs, bar and line graphs.
7	• To report findings from enquiries, including conclusions and degree of trust in results, in written forms by reporting and presenting the findings of their enquiry.
8	• To recognise the impact of drugs on the way their bodies function in the context of drugs and alcohol. • To identify scientific evidence that has been used to support or refute ideas or arguments in the context of changing attitudes to smoking.
9	• **End of unit Assessment**

Lesson ideas

Key vocabulary