



All Saints C of E Primary School

Continuing the
Science Journey





Equipped with their five senses, people explore the universe around them and call the adventure Science.

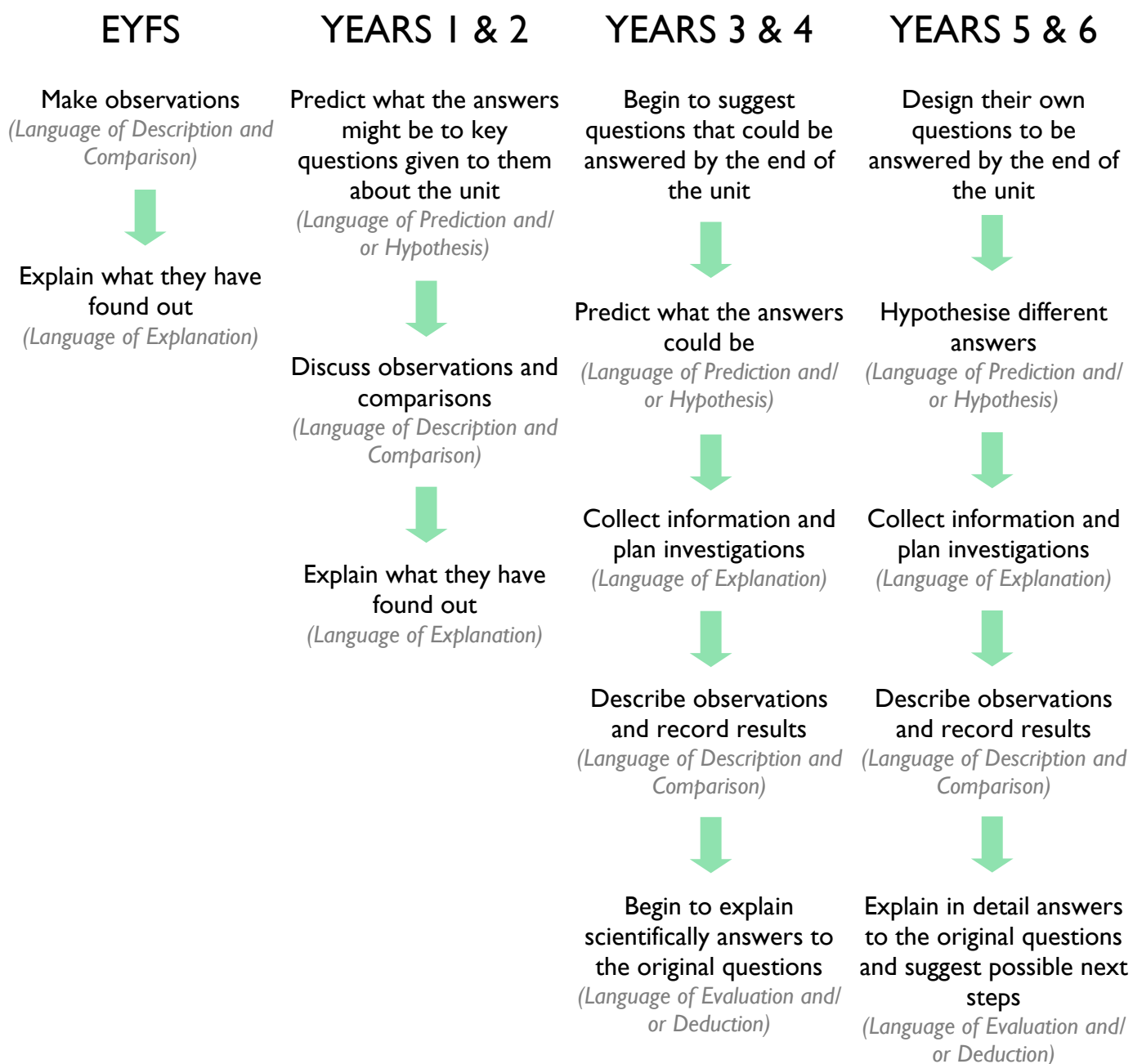


Science

Strands

1. Working Scientifically
2. Biology
3. Chemistry
4. Physics

Unit frames for children working within the expectations for:



Past and Present

Know some similarities and differences between things in the past and now in relation to life style during toy topic.

Talk about the lives of different characters and their role in society during stories.

~~Talk about the lives of people around them.~~

Understand how they themselves have changed over time .

Playing and Exploring	Active Learning	Creative and Critical Thinking
<ul style="list-style-type: none"> * Old and new toys box. * Family tree interactive display. * Big talk bags (families and friends) activities/toys for groups, independent play. 	<ul style="list-style-type: none"> * All about me topic * Growing topic - how I change over time. * Toys old and new similarities and differences. * Circle time * Big talk Families and friends 	<ul style="list-style-type: none"> * Making links between past and present.
	<ul style="list-style-type: none"> * Remote controlled toys * Toys with batteries 	

The Natural World

Use all their senses in hands on exploration of natural materials, sort and explore similarities and differences.
 Learn, observe and talk about animals.
 Plant seeds and care for growing plants.
 Learn new vocabulary about plants, animals and the natural world and begin to use it when observing.
 Understand that there are different countries in the world, through photos, videos and topics.

Playing and Exploring	Active Learning	Creative and Critical Thinking
<ul style="list-style-type: none"> * Potting shed * Nature box * Wild garden 	<ul style="list-style-type: none"> * Animal topic * Growing topic * Africa topic * Big talk topic sessions for vocabulary building. 	<ul style="list-style-type: none"> * Opportunities to talk about personal experiences of the natural world. * Observing the natural world through experience, video and story and talking using own knowledge. * Making links when observing and exploring.
	<ul style="list-style-type: none"> * Taking photos, camera on ipad. 	

Reception

Past and Present

Comment on images of familiar situations in the past.

Talk about the lives of the people around them and their roles in society.

Know some similarities and differences between things in the past and now drawing on their experiences and what has been read in class.

Understand the past through settings, characters, and events in stories and non-fiction texts.

Learn about how things change over time, growing and changing, people, plants, animals.

Playing and Exploring	Active Learning	Creative and Critical Thinking
<ul style="list-style-type: none">* Train sets old and new.* Cars old and new.* People who help us small world* People who help us dress up role play.	<ul style="list-style-type: none">* PWHU topic, jobs and roles in society.* TRANSPORT topic old and new.* Books and stories* GROWING Topic, plants, people, animals.* Seasons big talk sessions.* Sessions on artists, Arkimboldo, Monet.	<ul style="list-style-type: none">* Watch and observe looking for changes and making links.
	<ul style="list-style-type: none">* Discovery espresso	

Reception

People, Culture and Communities

Opportunities to talk about their immediate family and community.

Understand that some places are special to members of their community.

Recognise that people have different beliefs that are celebrated in different ways.

Recognise some environments that are different to the ones that they live in.

Describe their immediate environment.

Explain some similarities and differences between life in this country and life in other countries.

Playing and Exploring	Active Learning	Creative and Critical Thinking
<ul style="list-style-type: none"> * India topic box. * China topic box. * Diwali Festival box * Chinese New Year festival box * Christmas, harvest and Easter Festival box. 	<ul style="list-style-type: none"> * Festivals and celebrations sessions, videos and stories. * Stories and books. * ALL ABOUT ME topic * Home celebrations wall. * R.E sessions * Class worship * Rights respecting assemblies * FOOD topic (where food comes from) 	<ul style="list-style-type: none"> * Make links between places, people, cultures or communities.
	<ul style="list-style-type: none"> * Discovery espresso * Purple Mash -Simple City 	

Reception

The Natural World

Opportunities to explore the natural world around them.
Understand the effect of changing seasons on the natural world.

Understand where food comes from.

Describe what they see, hear and feel whilst outside.

Make observations and draw pictures of animals and plants.

Know some similarities and differences between the countryside and the city.

Explore and understand some changing states of matter.

Playing and Exploring	Active Learning	Creative and Critical Thinking
<ul style="list-style-type: none"> * Autumn topic box * Winter topic box * Spring topic box * Summer topic box * Potting shed * Wild area 	<ul style="list-style-type: none"> * Big talk sessions to develop vocabulary. * Gardening * Chicks hatching * Winter freezing and melting experiments * GROWING topic * Stories and books * Espresso videos * Farm visit * MINIBEASTS topic 	<ul style="list-style-type: none"> * Making links when observing * Comparing things observed. * Finding similar keys and differences * Noticing changes independently * Creating their own mini garden
	<ul style="list-style-type: none"> * Camera skills , video for recording. 	

YEARS 1 & 2

- **Planning**
 - Ask simple questions and recognise that they can be answered in different ways.
 - *Ask people questions and use secondary sources.*
- **Predicting**
 - *Begin to recognise ways in which they might answer scientific questions about different types of scientific enquiries (including practical activities).*
- **Observing**
 - Observe closely, using simple equipment (e.g. hand lenses, egg timers etc).
 - *Identify and classify.*
 - *Comparison of objects.*
 - *Sorting and grouping.*
 - *Find patterns and relationships.*
- **Performing Tests**
 - Perform simple tests.
- **Concluding**
 - Use their observations and ideas to suggest questions.
- **Presenting**
 - Communicate and record findings in a range of ways.

P.S.H.E.

LANGUAGE

MATHEMATICS

RESOURCE

- Safe use of equipment.

Similarities / Differences

Identify

Classify / Sort /Group

Observe changes over time

Notice patterns (Notice relationships)

Secondary sources

Questions / Answers

Equipment types

Gather

Measure

Record

Results

Evidence

Table

Order (Rank)

Link

Measures - including time, length, weight and capacity.

Counting.

Language of size and ordering.

Using tables and simple pictograms and charts.

YEARS 3 & 4

● Planning

- Ask relevant questions and use different types of scientific enquiries to answer them.
- *Make their own decisions about the most appropriate type of scientific enquiry*
- Help make decisions about what observations to make, how long to make them for and the type of simple equipment that might be used.

● Observing

- Make systematic and careful observations and where appropriate take accurate measurements using standard units, using a range of equipment (including thermometers and data loggers).

● Performing Tests

- Set up practical enquiries, comparisons and fair tests.
- Look for naturally occurring patterns and relationships and decide what data to collect to identify them.
- Gather, record, classify and present data in a variety of ways to help in answering questions.

● Concluding

- Begin to identify new questions arising from the data, making predictions for new values within or beyond the data they have collected and find ways of improving what they have already done.
- Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.
- Identify differences, similarities or changes related to simple scientific ideas and processes.
- Use straight forward scientific evidence to answer questions or to support their findings (using scientific language).

● Presenting

- Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts and tables.
- Report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.

P.S.H.E.

- Differentiate between the terms 'risk', 'danger' and 'hazard'.
- To deepen their understanding of risk recognising, predicting and assessing risks in different situations and deciding how to manage them responsibly and to use this to build resilience.
- Know school rules about health and safety, basic emergency first aid procedures, where and how to get help.

LANGUAGE

Questions
Types of scientific enquiry
Answer
Changes
Comparative tests
Fair tests
Careful (systematic)
Accurate
Observations
Present
Data/evidence/results
Keys
Bar charts
Results
Conclusions
Prediction
Support
Thermometers
Data loggers
Magnifying glass
Microscope

Increase
Decrease

MATHEMATICS

Measures -
including time,
length, weight and
capacity.
Counting.
Calculating.
Language of size
and ordering.
Using, interpreting
and producing
tables and graphs.

RESOURCE

YEARS 5 & 6

● Planning

- Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.
- *Recognise which secondary sources will be most useful to research their ideas.*

● Predicting

- Use test results to make predictions to set up further comparisons and fair tests.

● Observing

- *Use and develop keys and other information records to identify, classify and describe living things and materials, and identify patterns that might be found in the natural environment.*

● Performing Tests

- Take measurements using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.
- Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.
- Decide how to record data from a choice of familiar approaches.

● Concluding

- *Use results to identify when further tests and observations might be needed.*
- Identify scientific evidence that has been used to support or refute ideas of arguments.
- *Use relevant scientific language and talk about ideas developed over time.*

● Presenting

- Report and present 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.

P.S.H.E.

- Differentiate between the terms 'risk', 'danger' and 'hazard'.
- To deepen their understanding of risk recognising, predicting and assessing risks in different situations and deciding how to manage them responsibly and to use this to build resilience.
- Know school rules about health and safety, basic emergency first aid procedures, where and how to get help.

LANGUAGE

Opinion / fact
Variables
Independent variable
Dependent variable
Controlled variable
Accuracy
Precision
Degree of trust
Classification keys
Scatter graphs
Line graphs
Causal Relationships
Support / refute

MATHEMATICS

Measures -
including time,
length, weight and
capacity.
Counting.
Calculating.
Averaging and
other statistics.
Language of size
and ordering.
Using, interpreting
and producing
tables and graphs.

RESOURCE

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 (e.g. leaves, flowers (blossom), petals, fruit, root, bulb, seed, trunk, branches, stem), including trees (observe the growth of flowers and vegetables that they have planted).

● Animals, including Humans

- Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals (including pets).
- 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).
- Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.
- Understand how to take care of animals from the local environment.

- Names of locally found wild and flowering plants.
 - Names of locally found trees.
 - Leaf / leaves, flower, blossom, petal, fruit, berry, root, bulb, seed, trunk, branch, stem, bark, stalk, vegetable.
 - Names of flowers and vegetables grown locally.
- Know the names for the main parts of the body (including external genitalia) the similarities and differences between boys and girls.
 - Know that people and other living things have needs and that they have responsibilities to meet them (including being able to take turns, share and understand the need to return things that have been borrowed).
 - Know what improves and harms their local, natural and built environments and about some of the ways people look after them.
- Names of common animals (fish, amphibians, reptiles, birds, mammals).
 - Name common animals that eat other animals (carnivores), common animals that eat plants (herbivores) and common animals that eat plants and animals (omnivores).
 - Wild animals, pets
 - Body, head, neck, arms, elbows, legs, knees, face, ears, eyes, eyebrows, eyelashes, nose, hair, mouth, teeth, tongue, feet, toes, fingers, nails, ankle, calf, thigh, hips, waist, trunk, chest, shoulders, back, hands, wrist
 - Tail, wing, claw, fin, scales, feathers, fur, beak
 - Senses, hear / hearing, see / seeing, touch / touching, smell / smelling, taste / tasting.
 - Rough / smooth (texture), bright / dim (light), loud / quiet (sound), high / low (pitch), repeating / continuous sound.

YEAR 2

● 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 micro-habitats (e.g. under stones, logs or leaf litter).
- Describe how animals obtain their food from plants and other animals, using the ideas of a simple food chain, and identify and name different sources of food.

● 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.

● Animals, including Humans

- Know that animals, including humans, have offspring which grown 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 foods, and hygiene.

- Know what constitutes a healthy lifestyle including the benefits of physical activity, rest, healthy eating and dental health.
 - Recognise what they like and dislike, how to make real, informed choices that improve their physical and emotional health, to recognise that choices can have good and not so good consequences.
 - Know about change and loss and the associated feelings (including moving home, losing toys, pets or friends).
 - Know the importance of and how to maintain personal hygiene.
 - Know how some diseases are spread and can be controlled and the responsibilities they have for their own health and that of others.
 - Know about the process of growing from young to old and how people's needs change.
 - Know about growing and changing and new opportunities and responsibilities that increasing independence may bring.
- Living / dead, never been alive.
 Move, grow, feed, have offspring / young / babies
 Name local habitats e.g. pond, woodland, meadow (seashore, woodland, ocean, rainforest).
 Name micro-habitats e.g. under log, on stony path, under bushes.
 Damp / wet / dry, dark / light, hot / warm / cool / cold (use comparatives e.g. hotter) (Conditions), suited / suitable, basic needs, depend.
 Food, food chain, sources of food.
 Shelter.
- Seeds, bulbs
 Fully grown (mature plants)
 Water, light
 Damp / wet / dry, dark / light, hot / warm / cool / cold (use comparatives e.g. hotter) (temperature)
 Grow / growth, healthy
 Shoot, seedling (germinate / germination)
 Wither / limp, die, dry / crispy
 Soil, earth
- Offspring (reproduction, life cycles)
 Names for people as they age.
 Basic needs, water, food, air, breathing, survival, exercise.
 Food types
 Fruit and vegetable
 Bread, rice, potato, pasta
 Milk and dairy food
 Foods high in fat or sugar
 Meat, fish, egg, beans
 (Will be introduced to nutrition and nutrients in Y3 so avoid the terms protein, carbohydrates etc)
 Hygiene, clean, wash, healthy, medicine, drugs

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 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.

● Animals, including Humans

- Identify that animals, including humans, need the right types and amount of nutrition, and 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.
- *Name the main body parts of the body and discover the function of parts of the skeleton and muscles.*

(See Y1 for basic parts of plants and Y2 for describing conditions)

Part (structure), Role (function)
Water, light, air, nutrients, soil, fertiliser
Transported
Life cycle, pollination, seed formation, seed dispersal.

- Know what positively and negatively affects their physical, mental and emotional health (including the media).
- Know how to make informed choices (including recognising that choices can have positive, neutral and negative consequences) and to begin to understand the concept of a 'balanced lifestyle'.
- To recognise opportunities to make their own choices about food, what might influence their choices and the benefits of eating a balanced diet.

(See Y2 for food types)

Nutrition / nutrients
Carbohydrates, protein, vitamins and minerals, fat, dietary fibre, water, balanced diet
Skeleton, muscles, support, protection, movement
Skull, ribs, spine / vertebra (vertebrate / invertebrate), joints, sockets, bones, tendons.

YEAR 4

● Living Things and their Habitats

- 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.
- *Identify how habitats change throughout the year.*
- *Begin to put vertebrate animals into groups such as fish, amphibians, reptiles, birds and mammals; and invertebrates into snails and slugs, worms, spiders and insects.*
- *Begin to explain the impact of human impact (both positive and negative) on environments.*

● Animals, including Humans

- Describe the simple functions of the basic parts of the digestive system in humans.
- *Name the main body parts associated with the digestive system (e.g. mouth, tongue, teeth, oesophagus, stomach and small/large intestine).*
- 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.

- To research, discuss and debate topical issues, problems and events concerning health and wellbeing and offer their recommendations to appropriate people.
- Know that there are different kinds of responsibilities, rights and duties at home, at school, in the community and towards the environment.

- Know what positively and negatively affects their physical, mental and emotional health (including the media).
- Know how to make informed choices (including recognising that choices can have positive, neutral and negative consequences) and to begin to understand the concept of a 'balanced lifestyle'.
- To recognise opportunities to make their own choices about food, what might influence their choices and the benefits of eating a balanced diet.

Classification keys.
 Environment.
 Fish, amphibians, reptiles, birds, mammals.
 Vertebrates, invertebrates (name some).
 Human impact (name some positive and negative impact).

Digestive system.
 Nutrition, nutrients.
 Mouth, teeth, canines, incisor, molar, pre-molar, rip, tear, chew, grind, cut
 Saliva, tongue, oesophagus (gullet), stomach, small intestine, large intestine, rectum, anus.
 Carnivore, herbivore, omnivore.
 Producer, consumer, predator, prey, food chain.

Statistics.

YEAR 5

● Living Things and their Habitats

- 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.
- *Know about different types of reproduction, including sexual and asexual reproduction in plants, and sexual reproduction in animals.*
- *Find out about the work of naturalists and animal behaviourists, for example David Attenborough and Jane Goodall.*

● Animals, including Humans

- Describe the changes as humans develop to old age.
- Draw timelines to indicate stages in the growth and development of humans. They should learn about the changes experienced in puberty.

- To research, discuss and debate topical issues, problems and events concerning health and wellbeing and offer their recommendations to appropriate people.
- Know that there are different kinds of responsibilities, rights and duties at home, at school, in the community and towards the environment.

- Know how their body will, and emotions may, change as they approach and move through puberty.
- Know about human reproduction.

Life cycle
Reproduction, sexual / asexual, germination, pollination
Seed formation, dispersal
Pollen, stamen, stigma
Plantlets (e.g. spider plant), runners (e.g. strawberry plant).
Mammal, amphibian, insect, bird, fish, reptile
Eggs, live young

Statistics

YEAR 6

● Living Things and their Habitats

- 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.
- Give reasons for classifying plants and animals based on specific characteristics.
- Find out about the significance of the work of scientists such as Carl Linnaeus, a pioneer of classification.

● Animals, including Humans

- 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.
- *Know how their bodies might be damaged - including how some drugs and other substances can be harmful to the human body.*
- Describe the ways in which nutrients and water are transported within animals, including humans.

Evolution and Inheritance

- 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.
- *Know how living things on earth have changed over time.*
- *Know that variation in offspring over time can make animals more/less able to survive in particular environments (e.g. length of a giraffes' neck, insulating fur of the arctic fox).*
- *Find out about the work of palaeontologists such as Mary Anning and about how Charles Darwin and Alfred Wallace developed their ideas on evolution.*

(see Y4)
 Organism / micro-organisms.
 Fungus / mushrooms
 Arachnid, mollusc, insect, crustacean.

Statistics

- Know that bacteria and viruses can affect health and that following simple routines can reduce their spread.
- Know that pressure to behave in an unacceptable, unhealthy or risky way can come from a variety of sources, including people they know and the media.
- Know what is meant by the term 'habit' and why habits can be hard to change.
- Know which, why and how, commonly available substances and drugs (including alcohol and tobacco) could damage their immediate and future health and safety, that some are legal, some are restricted and some are illegal to own, use and supply to others.

Circulatory system.
 Heart, blood, blood vessels.
 Pumps.
 Oxygen, carbon dioxide.
 Lungs.
 Nutrients, water.
 Diet, exercise, drugs, lifestyle.

Measures - capacity, time and temperature.

Evolution
 Suited / suitable
 Environment
 Suited
 Adapted / adaptation
 Offspring (reproduction)
 Characteristics
 Vary / variation
 Inherit / inheritance
 Fossils

Measures - time.

YEAR 1

● 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.

YEAR 2

● Materials

- Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses..
- Know how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.
- Find out about people who have developed useful new materials, for example John Dunlop, Charles Macintosh or John McAdam.

P.S.H.E.

LANGUAGE

MATHEMATICS

RESOURCE

- Use materials safely and be aware of risk.

Object, material.
Wood, plastic, glass, metal, water, rock.
Brick, paper, fabrics, elastic, foil, card / cardboard, rubber, wool, clay.
Hard, soft, stretchy
Waterproof, absorbent (NB natural / manufactured need defining if being used).
Breaks / tears (strong / weak) rough / smooth, shiny / dull (reflective / non-reflective), see through / not see through (transparent / opaque).

Comparative language.
Statistics

- Use materials safely and be aware of risk.

(See Y1)
Rigid, flexible
Strong / weak (breaks / tears),
Reflective (shiny Y1), non-reflective (dull Y1),
transparent, opaque, translucent
Shape, changed, push / pushing, pull / pulling, twist / twisting, squash / squashing, bend / bending, stretch / stretching, pinch / pinching, poke / poking, roll / rolling, squeeze / squeezing.

Comparative language.
Statistics
Measures

YEAR 3

Rocks

- 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.
- *Describe the similarities and differences between different kinds of rocks and soils, including those in the local environment.*

YEAR 4

Materials - States of Matter

- 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.
- Explore a variety of everyday materials and develop simple descriptions of the states of matter.
- Observe and describe water as a solid, a liquid and a gas.

P.S.H.E.

LANGUAGE

MATHEMATICS

RESOURCE

Rock, stone, pebble, boulder, soil, fossils.
Grains, crystals.
Hard / soft (test by scratching), texture
Absorb water (porous), let water through (permeable / impermeable).
Marble, chalk, granite, sandstone, slate, sandy soil, clay soil, chalky soil, peat.

Comparative language.
Measures - time.
Statistics (diagrams).

- Use equipment safely and understand risk.

States of matter, solid, liquid, gas
Air, oxygen
Powder, grain / granular, crystals
Change state, ice / water / steam, water vapour
Heated / heating, cooled, cooling
Temperature, degrees Celsius, melt, freeze, solidify, melting point, molten, boil, boiling point, evaporate / evaporation, condense / condensation
Water cycle, precipitation, transpiration

Comparative language.
Statistics
Measures - time, temperature and capacity.
Negative numbers.
Calculating.

YEAR 5

● Materials

- 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.
- *Find out about how chemists create new materials (e.g. Spencer Silver, who invented the glue for sticky notes or Ruth Benerito, who invented wrinkle-free cotton).*
- *Know that some conductors will produce a brighter bulb in a circuit than others and that some materials will feel hotter than others when a heat source is placed against them.*

P.S.H.E.

LANGUAGE

MATHEMATICS

RESOURCE

- Using equipment safely and understanding risk.

(see Y1 and Y2 for properties)

Magnetic force, magnet, attract
Solubility
Electrical conductivity
Thermal conductivity
Melting
States of matter, solid, liquid, gas
Change state
Dissolve, solution, insoluble
Solute, solvent
Particle
Mix / mixture
Filtering, sieving
Evaporating, residue, condensing, reversible changes
Not usually reversible, burning, gas given off, rusting.

Comparative language.
Measures - time, temperature and measures.
Statistics (diagrams).

YEAR 1

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

YEAR 3

- 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 a solid object.
 - Find patterns in the way that the size of shadows change.
 - *Know what happens when light reflects off a mirror or other reflective surfaces.*
 - *Measure shadows and know what might cause them to change.*
- Forces and Magnets
 - 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.
 - *Know that magnetic forces can act without direct contact, unlike most forces, where direct contact is necessary.*
 - *Know the behaviour and everyday uses of different magnets.*

P.S.H.E.

LANGUAGE

MATHEMATICS

RESOURCE

- Know that it is dangerous to look directly at the Sun.
- Know how to dress appropriately for different weather conditions.

Season, spring, summer, autumn, winter.
Weather, hot / warm, cool / cold, sun / sunny, cloud / cloudy, wind / windy, rain / rainy, snow / snowing, hail / hailing, sleet, frost, fog / mist, ice / icy, rainbow, thunder, lightning, storm.
Light / dark, day / night.

Comparative language.
Measures - time and temperature.

- Know that it is dangerous to look directly at the Sun.

Light, light source (name some), torch
Dark / darkness
Reflect / reflective
Mirror
Shadow, block
Direct / direction
Transparent, opaque, translucent

Comparative language.
Measures - time, length and angle.

- Know that magnets are used in recycling which helps preserve the environment.

Push / pulling, pull / pulling.
Contact force, non-contact force, magnetic force.
Magnet, strength, bar magnet, ring magnet, button magnet, horseshoe magnet.
Attract / repel.
Magnetic material, metal, iron, steel.
Non-magnetic material
Poles, north pole, south pole.

Comparative language.
Measures - time, length and angle.

YEAR 4

Sound

- 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.
- *Know how the pitch and volume can be changed on a number of musical instruments from around the world.*

● Electricity

- 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.
- *Draw circuits as a pictorial representation, not necessarily using conventional circuit symbols at this stage).*

P.S.H.E.

LANGUAGE

MATHEMATICS

RESOURCE

- Know that very loud noises can damage the ears.
- Know that prolonged periods of wearing headphones can damage the ears.

Sound, sound source, noise.
Vibrate / vibration, travel.
Solid, liquid, gas.
Pitch, tune, high / low.
Volume, loud / quiet, fainter, muffle.
Strength of vibrations.
Insulation
Instrument, percussion, strings, brass, woodwind, tuned instrument.

Comparative language.
Measures - time and temperature.

- Be aware of the dangers of electricity (including sockets, exposed wires etc).

Electricity
Appliances / devices
Mains, plug.
Electrical circuit (series circuit).
Complete circuit.
Circuit diagram.
Circuit symbol.
Components, cell, battery.
Positive / negative (terminal).
Connect / connection, loose connection, short circuit.
Wire, crocodile clip, bulb.
Bright / dim.
Switch, buzzer, motor.
Fast (er) / slow (er).
Conductor, insulator.
Metal / non-metal.

Comparative language.

YEAR 5

● Earth and Space

- 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.
- *Know that the Sun is a star at the centre of our solar system and that it has eight planets: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus and Neptune (Pluto was reclassified as a 'dwarf planet' in 2006).*

● Forces

- Explain that unsupported objects fall towards the Earth because of the force of gravity acting between 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.
- *Know how scientists, for example, Galileo Galilei and Isaac Newton helped to develop the theory of gravitation.*

P.S.H.E.

LANGUAGE

MATHEMATICS

RESOURCE

- Know that it is dangerous to look directly at the Sun.

Solar system, planets
Earth, Sun, Moon
Celestial body
Sphere/ spherical
Rotate / rotation, spin,
night / day
Mercury, Venus, Mars,
Jupiter, Saturn, Uranus,
Neptune, Pluto, dwarf
planet
Orbit, revolve
Geocentric model,
Heliocentric model,
shadow clocks, sundials,
astronomical clocks

Fall
Earth
Gravity (weight / mass)
Air resistance, water
resistance, friction
Moving surfaces
Mechanisms, levers,
pulleys, gears, force,
transfers

Comparative
language.
Measures - time,
distance, speed
and temperature.
Geometry - 3D
shapes and space.
Statistics.

Comparative
language.
Measures - length,
forces and time.

YEAR 6

● Light

- Recognise that light appears to travel in straight lines.
- Use the ideas 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.

● Electricity

- 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.
- *Construct simple series circuits (not parallel circuits), to help them to answer questions about what happens when they try different components (e.g. switches, bulbs, buzzers and motors).*
- *Learn how to represent a simple circuit in a diagram using recognised symbols.*

P.S.H.E.

LANGUAGE

MATHEMATICS

RESOURCE

- Know that it is dangerous to look directly at the Sun.

Light / light source (name some)
Dark / darkness
Reflect / reflective
Mirror
Shadow , block, absorb
Direct / direction
Transparent, opaque, translucent

Comparative language.
Measures - length.
Geometry - 3D shapes and space.

- Be aware of the dangers of electricity (including sockets, exposed wires etc).

(see Y4 for circuit components)
Terminal
Volume
Voltage
Current
Resistance

Comparative language.
Calculations.



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