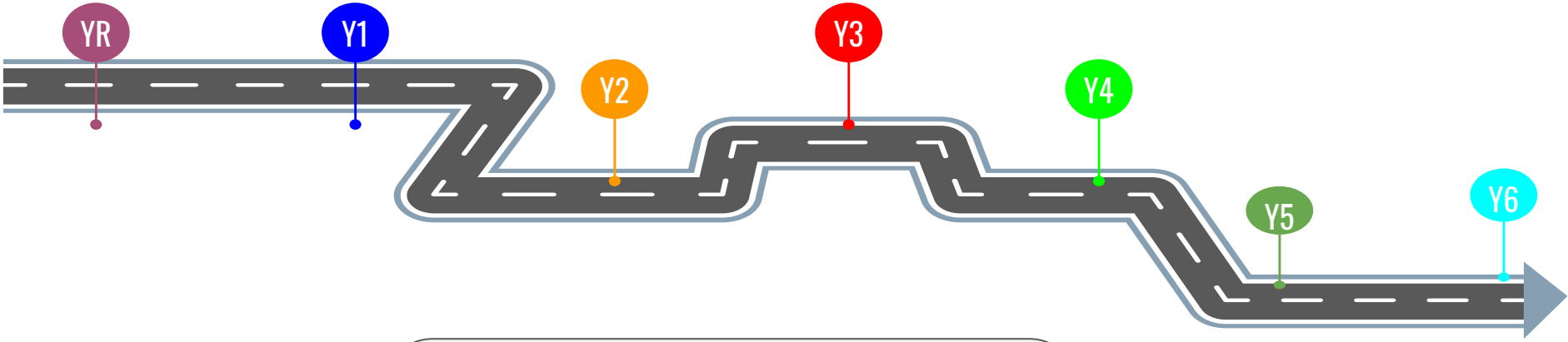
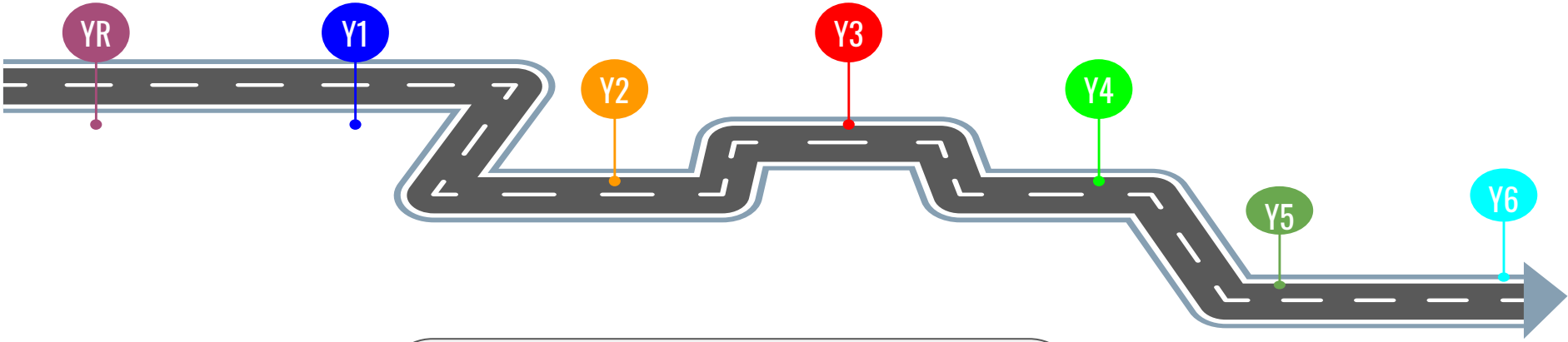
Houghton Primary School: SCIENCE



SCIENCE

CURRICULUM

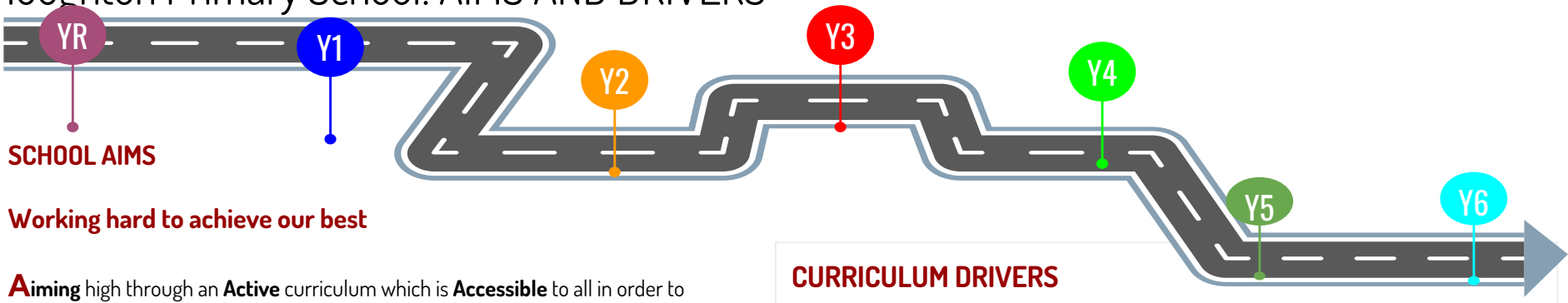
Houghton Primary School: SCIENCE



SCIENCE CURRICULUM

INTENT

Houghton Primary School: AIMS AND DRIVERS



SCHOOL AIMS

Working hard to achieve our best

Aiming high through an **Active** curriculum which is **Accessible** to all in order to **Achieve** the very best that we can

Challenging ourselves within a culture of **Care, Cooperation** and **Community**

Helping each other to achieve within a **Happy, Healthy** and **Hard-working** environment

Inspiring others to be **Independent, Involved** and ever **Improving**

Expecting the very best of ourselves and others and always aiming to be **Excellent** in all that we do

Valuing every individual and providing **Varied** learning experiences

Encouraging everyone through our **Enthusiasm** and **Eagerness** to be our very best

CURRICULUM DRIVERS

Oracy to place speech and communication at the heart of our curriculum enabling our children to speak confidently, appropriately and sensitively, learning through talk and deepening understanding through dialogue.

Diversity to develop our children's appreciation and understanding of a variety of cultures and lifestyles, engendering equality and challenging bias

Community to see ourselves as an integral part of the local, national and global community

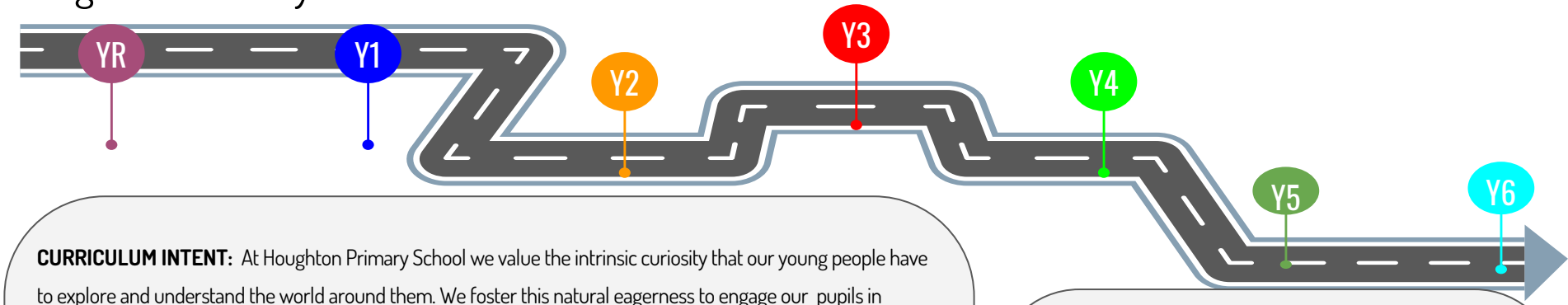
Environment to foster a passion for both the local and global environment and take responsibility for its care

Enquiry to encourage our children to be inquisitive, to ask questions and be resourceful. Our children will be persistent and independent in their learning.

Risk To encourage our children to learn to assess and manage risks by having fun and stepping outside their comfort zones

Enterprise to support our children in developing more independence and the opportunity to show initiative

Houghton Primary School: SCIENCE

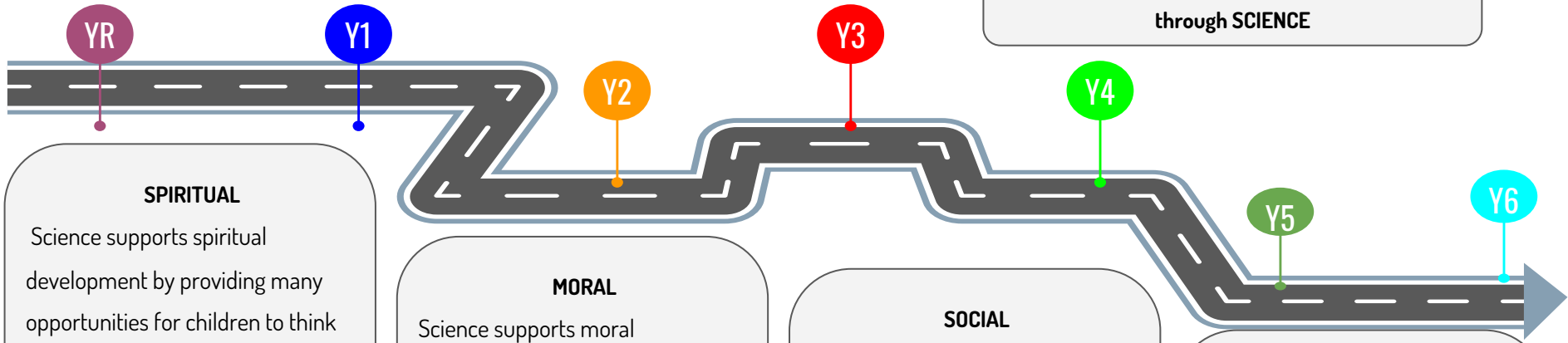


CURRICULUM INTENT: At Houghton Primary School we value the intrinsic curiosity that our young people have to explore and understand the world around them. We foster this natural eagerness to engage our pupils in meaningful learning activities, which explore the fundamentals of how their world works. We endeavour to use our natural environment which is close to the River Great Ouse, surrounded by meadows, woodland and our village, as well as local experts and real scientists to enhance our curriculum. We recognise that our children are growing up in a scientific age, where the world around us, both natural and humanly constructed, is changing rapidly. We wish to enable them to be able to relate to and engage in this world. We follow the National Curriculum Science programme of study tailoring it to our context through our curriculum drivers. We make connections with other areas of the curriculum, where they enhance pupils learning , through topic work. As well as teaching the knowledge aspect of the curriculum it is essential that pupils are taught how to work scientifically and that these two strands do not stand independently but are interwoven together. We have a practical "hands-on" curriculum to inspire awe and wonder.. We teach using the 5 lines of enquiry so that children have a broad understanding of what it means to be a scientist.

NC PURPOSE OF STUDY: A high-quality science education provides the foundations for understanding the world through the specific disciplines of biology, chemistry and physics. Science has changed our lives and is vital to the world's future prosperity, and all pupils should be taught essential aspects of the knowledge, methods, processes and uses of science. Through building up a body of key foundational knowledge and concepts, pupils should be encouraged to recognise the power of rational explanation and develop a sense of excitement and curiosity about natural phenomena. They should be encouraged to understand how science can be used to explain what is occurring, predict how things will behave, and analyse causes.

Houghton Primary School: SCIENCE

Spiritual, Moral, Social and Cultural Development through SCIENCE



SPIRITUAL

Science supports spiritual development by providing many opportunities for children to think and spend time reflecting on the amazing wonders which occur in our natural world.

MORAL

Science supports moral development by showing children that different opinions need to be respected and valued. There are many moral and ethical issues that we cover in science including discussions about environmental and human issues.

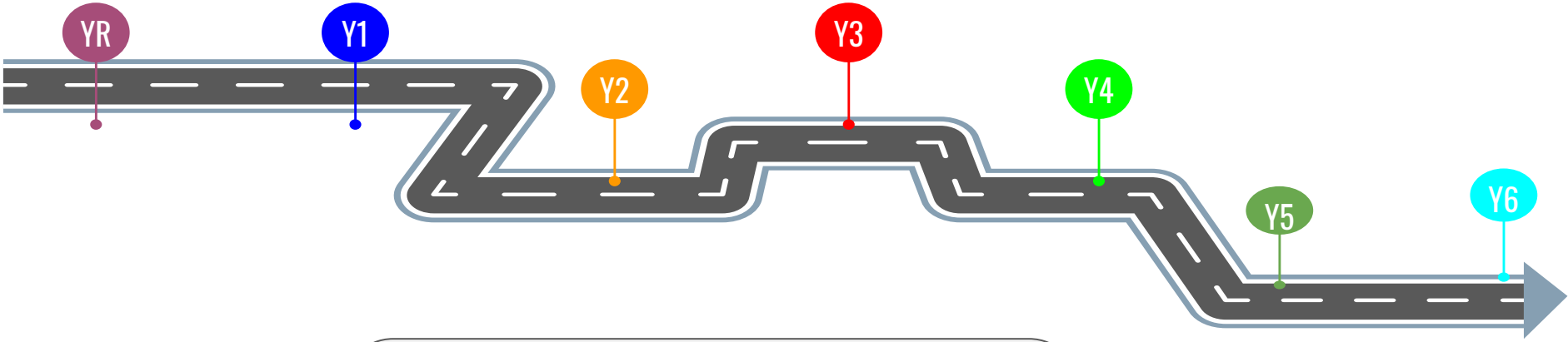
SOCIAL

Science supports social development by exposing children to the power of collaborative working in the science community which has led to some amazing and life changing breakthroughs in medicine. When undertaking experiments and research children work collaboratively.

CULTURAL

Science supports cultural development by looking at how scientists from a range of cultures have had a significant impact globally. It also helps children to understand how important science is to the economy and culture of the uk.

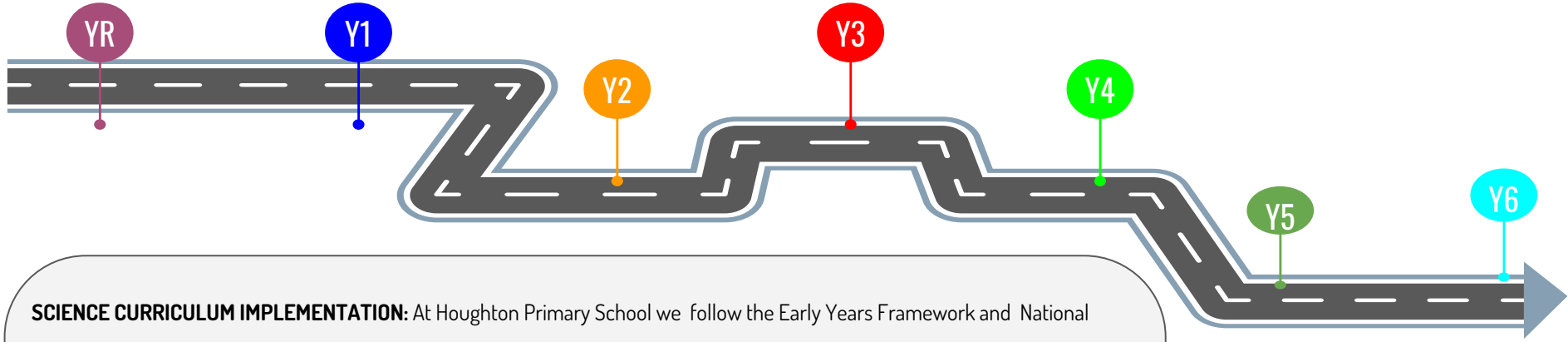
Houghton Primary School: SCIENCE



SCIENCE CURRICULUM

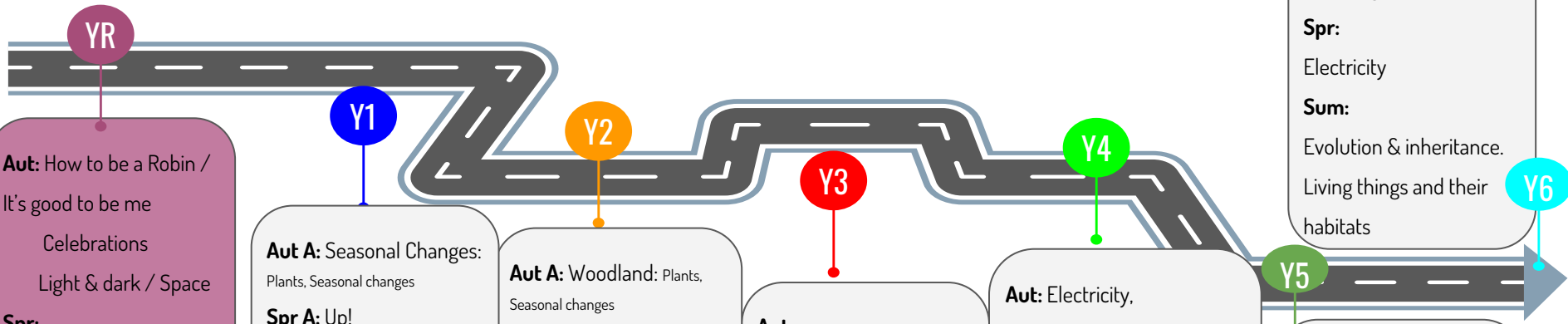
IMPLEMENTATION

Houghton Primary School: SCIENCE



SCIENCE CURRICULUM IMPLEMENTATION: At Houghton Primary School we follow the Early Years Framework and National Curriculum Science programme of study. Medium term planning identifies important knowledge the children should know at the end of each topic. This is planned alongside other curriculum areas in a learning journey recognising cross-curricular links where it enhances study of the individual subjects. Planning of lessons is responsive and progressive to the individual class and circumstance .Teachers achieve this through observing pupils working, use of carefully targeted questioning and discussion, as well as reviewing recorded work to assess pupils' learning throughout a topic. From early years to year 6 we engage pupils through exciting enquiry based activities which encourage pupils to work in a scientific way. The practical skills of working scientifically are taught, interwoven with the acquisition of knowledge using a range of hands on activities. We provide opportunities to use the local environment to bring the curriculum alive and connect pupils' learning to the world around them. We aim to enrich the curriculum and increase pupils' science capital with visitors, real scientists school trips and by taking part in events such as whole school science fairs and competitions.

Houghton Primary School: SCIENCE



YR

Aut: How to be a Robin / It's good to be me

Celebrations

Light & dark / Space

Spr:

A Winter's Tale

Hot & Cold

Elephants

Handa's Surprise

Sum:

It starts with a trickle

Growth & Change

Where we Live

Magical Creatures

Y1

Aut A: Seasonal Changes: Plants, Seasonal changes

Spr A: Up!

Animals including humans

Everyday materials and their uses

Sum A: Our World – Water Living things and their habitats, Animals including humans

Aut B: Our World – Land: Animals including humans

Spr B: Build!Everyday materials and their uses

Sum B: Minibeasts:Living things and their habitats, Plants

Y2

Aut A: Woodland: Plants, Seasonal changes

Spr A: Up!

Animals including humans

Everyday materials and their uses

Sum A: Our World – Water: Living things and their habitats, Animals including humans

Aut B: Our World – Land: Animals including humans, Plants

Spr B: Build!: Everyday materials and their uses

Sum B: Minibeasts Living things and their habitats, Plants

Y3

Aut:

AIH: Human nutrition, skeleton & muscles

Rocks, fossils and soil

Spr:

Forces and magnets

Sum:

Plants

Light

Y4

Aut: Electricity, Sound

Spr: Chocolate

SOM:: solids, liquids and gases

AIH: Human digestion & teeth

Sum: Rivers

SOM:The water cycle

AIH: Food chains,

LTTH: classification, how do habitats change?

Y5

Aut:

Space

Forces

Spr:

Materials

Sum: AIH: LTTH: Life cycles & reproduction

Y6

Aut: Light, Animals including humans:

Spr:

Electricity

Sum:

Evolution & inheritance.

Living things and their habitats

Houghton Primary School: SCIENCE

Reception Class

YR

EYFS Understanding the World Educational Programme (Statutory) Understanding the world involves guiding children to make sense of their physical world and their community. The frequency and range of children's personal experiences increases their knowledge and sense of the world around them – from visiting parks, libraries and museums to meeting important members of society such as police officers, nurses and firefighters. In addition, listening to a broad selection of stories, non-fiction, rhymes and poems will foster their understanding of our culturally, socially, technologically and ecologically diverse world. As well as building important knowledge, this extends their familiarity with words that support understanding across domains. Enriching and widening children's vocabulary will support later reading comprehension. ELG: the Natural World

- Explore the natural world around them, making observations and drawing pictures of animals and plants;
- Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class;
-Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.

EYFS/NC Statements	What do they need to know?	How can they show they are scientists?
Reception **Key vocabulary:** Know a range of scientific words such as habitat (words which will lead into Year 1 topics for example) Know a range of words that relate to scientific enquiry such as observe, explore, results, investigate, explain (in line with consistent vocabulary that is used in Year 1) Be able to name a range of equipment that they use such as pooter, magnifying glass, incubator	**Autumn** **TOPIC: It's All About Me / How to be a Robin / Autumn** That there are four seasons across the year; That the seasons affect the temperature; Plants and animals react to seasons in the way they grow and their natural life cycles; **TOPIC: Celebrations** Know that temperature can change materials in both reversible and irreversible ways such as melting ice, chocolate or baking bread; That science has helped us to live healthier lives for example understanding our bodies – link to oral hygiene That science helps us to develop equipment that makes our lives easier (and more fun), cameras, cars, bouncy castles... **TOPIC: Earth & Space** The length of day and night changes depending on the season; Know the vocabulary of the four seasons.	**TOPIC: Autumn** Start to use the vocabulary associated with the seasons. Comment on the weather and temperature making simple observations linked to seasonal understanding. Comment on what they see in their local environment such as flowers in bud or leaves falling from trees and make connections, linking it to their seasonal understanding. Comment on characters, settings and events in stories that are linked to seasonal characteristics and changes. Collect and examine evidence of changing seasons talking about what they see. Use their senses and hands on exploration of natural materials and their environment to explore and talk about what they see, hear, smell and touch. Ask questions and investigate why things happen in the classroom and wider environment through adult led and child initiated activities for example creating a volcano experiment that leads to a discussion of the process alongside real life pictures and videos – often linked to the children's own interests. Understand the importance of oral hygiene and how to look after their bodies and own personal hygiene. Be able to ask and answer questions in familiar contexts, e.g. What happens at night? What can we see when it's dark? What helps us to see in the dark? How do we travel? How do things move? Explore how things work and talk about it for example magnifying glasses and how they make things bigger to be seen in more detail.

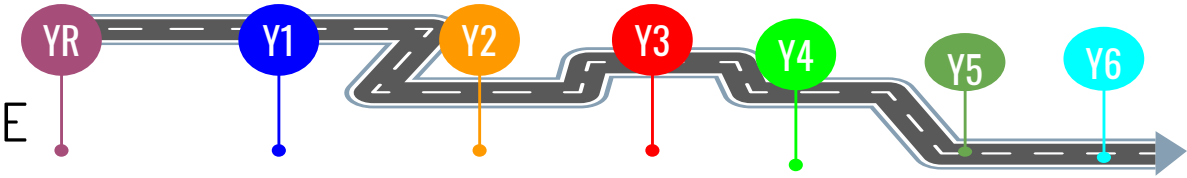
Houghton Primary School: SCIENCE

Reception Class

YR

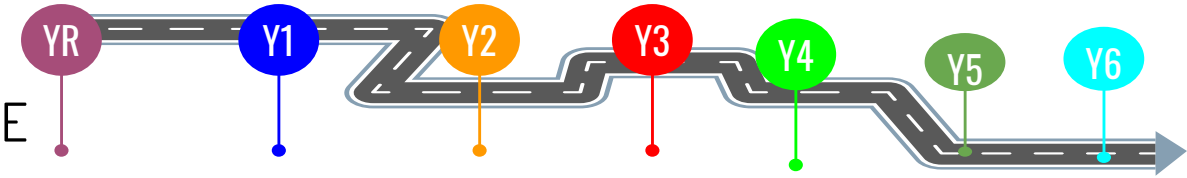
EYFS/NC Statements	What do they need to know?	How can they show they are scientists?
Reception **Key vocabulary:** Healthy, unhealthy, germs, tongue, teeth heart, brain, bones, skin. Autumn, winter, spring, summer, weather, hot, cold, snowing, freezing, warm, wet, cloudy, harvest, farming, leaves, light, dark, desert, polar. Plants, grow, soil, sunlight, fruit, vegetable, tree, flower, bush, water. Life cycle, grow, change, tadpole, froglet, frog, larva, caterpillar, chrysalis, cocoon. Water cycle, evaporation, condensation Material, float, sink, plastic, fabric, wood, strong, waterproof, bendy, light, Pollution, recycle, rubbish, environment, community.	**Spring** **TOPIC: A Winter's Tale / Hot & Cold** That there are different natural environments around the world that have specific characteristics such as deserts, forests, islands That the seasons affect the temperature; **TOPIC: Handa's Surprise / Rumble in the Jungle** How to respect and care for the natural environment and all living things; That there are different natural environments around the world that have specific characteristics such as deserts, forests, islands **Summer** **TOPIC: It starts with a trickle** That the natural environment and world around them supports them to live and grow; How to care for their immediate environment and the wider world; How to handle equipment carefully, safely and appropriately; Know that some specialist equipment can help us to understand the natural world and enhance our experiences; **TOPIC: Where we live /Growth & change** That some things are living and others are non- living; How to plant seeds and look after living plants to help them grow; That animals change as they grow and have life cycles;	**TOPIC: A Winter's Tale / Hot & Cold** Talk about their knowledge for example that some animals habitats need certain conditions such as polar bears prefer to live in cold climates. Demonstrate this through their small world play and storytelling. Start to use the vocabulary associated with the seasons. Comment on the weather and temperature making simple observations linked to seasonal understanding. Comment on what they see in their local environment such as flowers in bud or leaves falling from trees and make connections, linking it to their seasonal understanding. Comment on characters, settings and events in stories that are linked to seasonal characteristics and changes. Collect and examine evidence of changing seasons talking about what they see. **TOPIC: Handa's Surprise / Rumble in the Jungle** Ask and answer questions about what they have observed, e.g. Who lives where? Why do some animals live in cold places and some do not? Why is plastic harmful? How can we help to keep our planet clean? **Summer** **TOPIC: It starts with a trickle** Take part in activities such as recycling in school, rewilding projects, traffic calming posters and develop an eco-conscious approach to classroom practices and resources. Select equipment and materials to use to create e.g. a nest, or animal habitat (bug hotel, hedgehog home) To observe closely and present results **TOPIC: Where we live / Growth & change** Communicate orally, in simple descriptions and explanations for example talk about a farm, which animals live there / plants grow there and the job of the farmer. Sort e.g. living things, into two simple groups, using given criteria. Communicate what they have learned through drawing or some other way of recording. Can comment on how two animals, are similar or different from each other; notice and describe how they change as they grow. Ask and answer questions about what they have observed E.g. May ask and answer science based questions on first hand experiences and books.

Houghton Primary School: SCIENCE



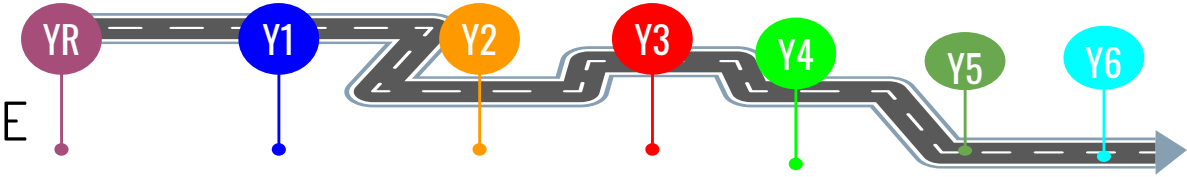
NC Statements	Autumn	Spring	Summer
KS1 (Topic Cycle A) **Children will be taught to:**	**TOPIC: WOODLANDS** Observe changes across the four seasons (SC1); Observe and describe weather associated with the seasons and how day length varies (SC1) Identify and name a variety of common plants, including garden plants, wild plants and trees and those classified as deciduous and evergreen (P1); Identify and describe the basic structure of a variety of common flowering plants, including roots, stem/trunk, leaves and flowers (P1) Identify and name a variety of plants and animals in their habitats, including micro-habitats (P1)	**TOPIC: UP!** Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets) (AIH1) Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water and rock (EM1) Describe the simple physical properties of a variety of everyday materials (EM1) Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick/rock, and paper/cardboard for particular uses (UOEM2)	**TOPIC: OUR WORLD - WATER** Explore and compare the differences between things that are living, dead, and things that have never been alive (LTATH2) Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals (AIH1) Identify and name a variety of common animals that are carnivores, herbivores and omnivores (AIH1) 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 (LTATH2) 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 (LTATH2)

Houghton Primary School: SCIENCE



NC Statements	Autumn	Spring	Summer
KS1 (Topic Cycle B) **Children will be taught to:**	**TOPIC: OUR WORLD - LAND** Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals (AIH1) Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets) (AIH1) Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense (AIH1) Find out about and describe the basic needs of animals, including humans, for survival (water, food and air) (AIH2) Notice that animals, including humans, have offspring which grow into adults (AIH2) Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene (AIH2)	**TOPIC: BUILD!** Distinguish between an object and the material from which it is made(EM1) Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water and rock (EM1) Describe the simple physical properties of a variety of everyday materials (EM1) Compare and group together a variety of everyday materials on the basis of their simple physical properties (EM1) Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick/rock, and paper/cardboard for particular uses (UOEM2) Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching (UOEM2)	**TOPIC: MINIBEASTS** Identify and name a variety of plants and animals in their habitats, including micro-habitats (LTATH2) Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees (P2) Identify and describe the basic structure of a variety of common flowering plants, including trees (P1) 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 (LTATH2) 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 (LTATH2) Observe and describe how seeds and bulbs grow into mature plants (P2) Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy (P2)

Houghton Primary School: SCIENCE



NC Statements	Autumn	Spring	Summer
Year 3 **Children will be taught to:**	**TOPIC: Human nutrition, skeleton & muscles Rocks, fossils and soil** 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. 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.	**TOPIC: 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.	**TOPIC: Plants, Light** 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 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 and find patterns in the way that the size of shadows change.

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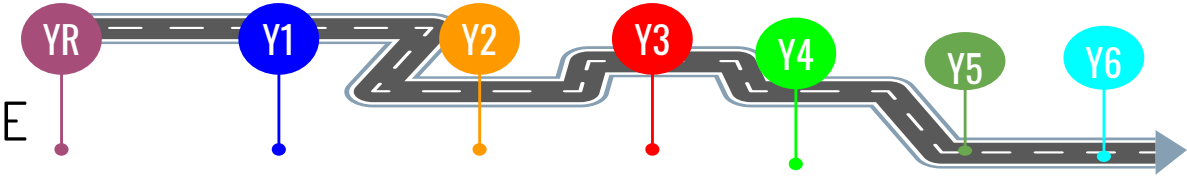

NC Statements	Autumn	Spring	Summer
Year 4 **Children will be taught to:**	**TOPIC: Electricity, Sound** Identify common appliances that run on electricity Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers Identify 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. 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.	**TOPIC: Materials and states of matter, Human digestion & teeth** 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) 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 function	**TOPIC: Water cycle, Food chains, Classification, Habitats** Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. Construct and interpret a variety of food chains, identifying producers, predators and prey 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

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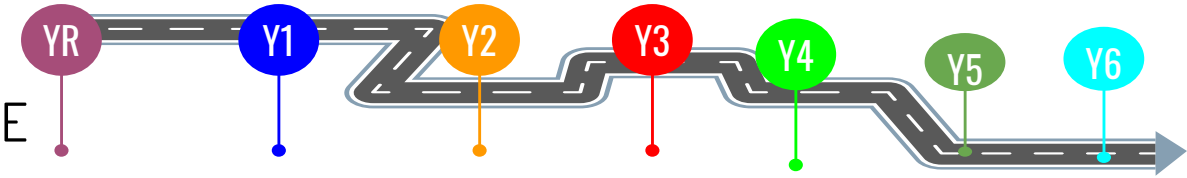
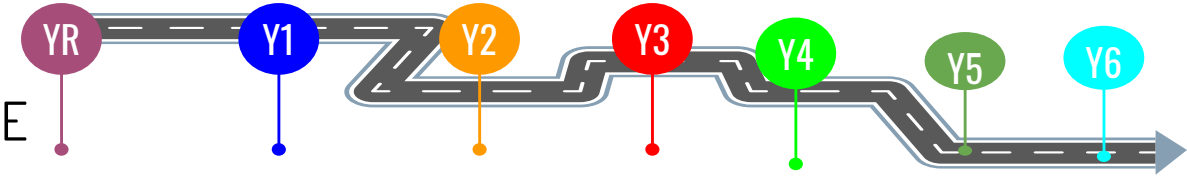


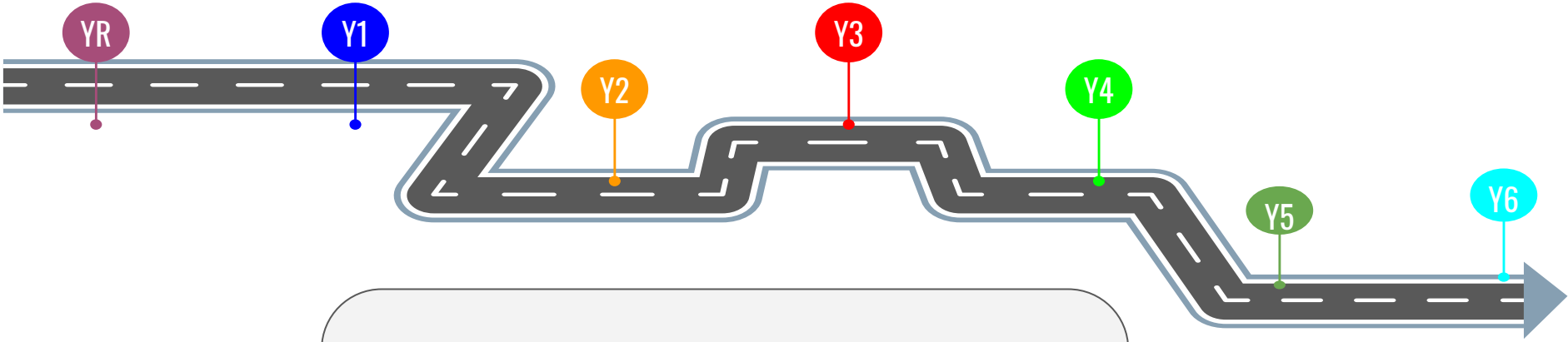
NC Statements	Autumn	Spring	Summer
Year 5 **Children will be taught to:**	**TOPIC: Space, Forces** Describe the movement of the Earth, and other planets, relative to the Sun in the solar system Describe the movement of the Moon relative to the Earth Describe the Sun, Earth and Moon as approximately spherical bodies Use the idea of the Earth's rotation to explain day and night, and the apparent movement of the sun across the sky 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	**TOPIC: 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	**TOPIC: Living things and their habitats , Animals including humans** 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. Describe the changes as humans develop to old age

Houghton Primary School: SCIENCE



NC Statements	Autumn	Spring	Summer
Year 6 **Children will be taught to:**	**TOPIC: Light, Animals including humans:** 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 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	**TOPIC: 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 Use recognised symbols when representing a simple circuit in a diagram	**TOPIC: Evolution & inheritance. Living things and their habitats** 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 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

Houghton Primary School: SCIENCE



SCIENCE CURRICULUM **IMPACT:**

Skills and Knowledge Statements

As a result of teaching our Science curriculum what will our children be able to do (skills) and what will they know (knowledge)?

Houghton Primary School: SCIENCE

Y1

YEAR 1 A: SKILLS

AUTUMN TERM A

Children working within year group expectations will be able to:
Observe local trees and sort according to deciduous/evergreen; recognise a variety of leaf shapes and be able to name the trees they came from.
Observe the local environment and habitats (hedges, meadow, woodland, churchyard, garden) spotting key patterns e.g. a woodland has lots of trees, a meadow is an open space with grasses and flowers etc.

SPRING TERM A Y1

Children working within year group expectations will be able to:
Identify characteristics which make an animal a bird; sort these from other animals that fly.

Investigate which materials may suit a particular purpose (eg: make a kite/parachute to fly the highest/drop the slowest)

SUMMER TERM A Y1

Children working within year group expectations will be able to:
Recognise the characteristics of living things and sort a variety of living, dead and things that have never been alive.
Sort vertebrates into their classes: fish, mammals, birds and reptiles.
Classify animals according to their diet.
Make a food chain based on a particular habitat(s)
Research / investigate how animals have adapted to suit particular habitats.
Describe how populations are affected by changes eg: climate, weather, development, predators (eg: barn owl population affected by number of voles, rain and busier roads)

Houghton Primary School: SCIENCE

Y1

YEAR 1 A: KNOWLEDGE

AUTUMN TERM A

By the end of this term children will know:

The names of and label the different parts of a tree (roots, trunk, bole, branch, twig, leaf, bud, flower, catkin, cone, fruit)
The name and some the key defining features of local habitats e.g. woodland, meadow, hedgerow.

SPRING TERM A

By the end of this term children will know:

The names of birds and other flying animals.
How they are adapted to their environment.
That birds inspired early flying machines.
And use correctly the technical vocabulary: rigid, flexible, transparent, translucent and opaque.

SUMMER TERM A

By the end of this term children will know:

That vertebrates have backbones.
The names of an example for each vertebrate class and their broad characteristics.
The terms herbivore, carnivore and omnivore and name an example of each.
That animals are adapted to live in specific habitats and give some examples.

Houghton Primary School: SCIENCE

Y1

YEAR 1 B: SKILLS

AUTUMN TERM B

Children working within year group expectations will be able to:
Classify animals according to their diet.
Sort vertebrates into their classes: fish, mammals, birds and reptiles.
Talk about what animals need in order to survive, using examples from different continents
Order the stages of three mammalian life cycles from different continents, eg: elephants, marsupials and humans
Understand the need to look after our bodies and minds; give examples of how they can do this

SPRING TERM B

Children working within year group expectations will be able to:
Sort everyday objects, identifying the material they are made from;
Label objects around the classroom according to the material from which they are made
Compare materials for different qualities (eg: make a hat/coat for a teddy)
Investigate which materials may suit a particular purpose (eg: plastic for a raincoat)
Make a playdough object for a given purpose; test how squashy different sponges are

SUMMER TERM B

Children working within year group expectations will be able to:
Observe and research invertebrates in our local environment; Compare invertebrates found in different local habitats.
Observe and talk about how plants in the local environment change over time.
Make a food chain based on a familiar habitat, which includes minibeasts
Observe the local environment and habitats (hedges, meadow, woodland, churchyard, garden) spotting key patterns e.g. a woodland has lots of trees, a meadow is an open space with grasses and flowers etc.
Plant seeds and record observations daily/over short periods of time
Investigate locations to find best growing conditions for green plants.

Houghton Primary School: SCIENCE

Y1

YEAR 1 B: KNOWLEDGE

AUTUMN TERM B

By the end of this term children will know:

The terms herbivore, carnivore and omnivore and name an example of each.
That vertebrates have backbones.
The names of an example for each vertebrate class and their broad characteristics.
Name the five senses and label the organs(s) associated with each

SPRING TERM B

By the end of this term children will know:

The name of the material which an everyday object is made from.
And use correctly the technical vocabulary: rigid, flexible, transparent, translucent and opaque.

SUMMER TERM B

By the end of this term children will know:

The name of some invertebrates and where you may find them locally.
Name a range of plants (wildflowers and trees) in the locality;
Naame and label the main parts of a flowering plant, including trees.
The name and some the key defining features of local habitats e.g. woodland, meadow, hedgerow.
Key conditions green, leafy plants require to grow strong and healthy.

Houghton Primary School: SCIENCE

Y2

YEAR 2 A: SKILLS

AUTUMN TERM A - WOODLANDS

Children working within year group expectations will be able to:

Describe natural events during each season, in order

Know that different types of weather are more likely to happen at certain times of the year, with reference to wind speed/direction, rain and temperature and sunrise/set times

Recognise, name and describe features of local trees, including leaves, bark, twigs and tree shape

Recognise, name and label the different parts of a tree (roots, trunk, bough, branch, twig, leaf, bud, flower, catkin, cone, fruit)

Compare habitats in local environment (hedges, meadow, woodland, churchyard, garden, river)

SPRING TERM A - UP!

Children working within year group expectations will be able to:

Identify, label and describe (verbally and written) birds and other flying animals; look at how they are adapted to their environment and describe how their shape inspired early flight

Locate objects in the classroom which are made from given materials

Use technical vocabulary (eg; rigid, flexible, transparent, translucent, opaque, etc) to describe, label and write about real objects (eg: our classroom, planes, helicopters and other airborne manmade objects)

Sort materials according to their properties; Investigate which materials may suit a particular purpose (eg: make a kite/parachute to fly the highest/drop the slowest) and explain why it's suited best for the purpose.

SUMMER TERM A - OUR WORLD: WATER

Children working within year group expectations will be able to:

Sort a variety of things into living, dead and things that have never been alive, giving reasons for their choice.

Construct food chains based on particular habitats (eg: meadow, coastal, river)

Houghton Primary School: SCIENCE

Y2

YEAR 2 A: KNOWLEDGE

AUTUMN TERM A

By the end of this term children will know:

The names of the 4 different seasons we have in the UK and know that they can be characterised by particular types of weather and changes in day length.

The names and describe some of the key characteristics of trees growing in the local environment.

The names of different parts of a tree.

The names and key characteristics of habitats in the local environment.

SPRING TERM A

By the end of this term children will know:

The names and key characteristics of flying animals.

Describe the structure of birds and other flying animals and relate this to their behaviour / ability to fly.

The name of a variety of everyday materials e.g. wood, glass, plastic and be able to name some objects made from these.

Some simple physical properties of everyday materials.

SUMMER TERM A Y2

By the end of this term children will know:

That some things are living, some have been living and died and that some things have never been alive.

About the characteristics of the different groups of vertebrates and be able to give examples of each.

The terms vertebrate and invertebrate.

The terms omnivore, carnivore and herbivore and name examples of each.

That animals obtain their food by eating plants and other animals; and name a variety of food sources.

The names and key characteristics of key habitats and which animals live in these habitats. And how they are dependent on each other.

That animals are adapted to live in specific habitats and when these habitats change it can affect the animals and plants that live there.

Houghton Primary School: SCIENCE

Y2

YEAR 2 B: SKILLS

AUTUMN TERM B Y2: OUR WORLD - LAND

Children working within year group expectations will be able to:
Sort animals into groups according to their diet.
Recognise patterns e.g. between diet and tooth shape.
Group a variety of vertebrates according to a common criteria e.g. lay eggs, cold blooded, have feathers, give birth to live young etc.
Observe and / or research animal life cycles over time.
Observe / measure changes in growth over time.
Pan and explain how they have personal responsibility for their own mental and physical wellbeing.

SPRING TERM B Y2: BUILD

Children working within year group expectations will be able to:
Sort materials according to their own or a specific criteria related to the materials physical properties e.g. soft, rough, absorbent, flexible etc
Investigate and compare materials to identify a particular quality for an intended purpose (eg: waterproof hat for Brunel)
Compare objects (eg: bridges and structures worldwide) and understand how the material is suited to the purpose and can weather/change over time.
Observe which objects can be squashed/bent/twisted/stretched and relate its properties to its function (eg: stretchiest tights.)

SUMMER TERM B Y2: MINIBEASTS

Children working within year group expectations will be able to:
Observe invertebrates in our local environment using appropriate equipment.
Record observations of invertebrates in local habitats using appropriate scientific language.
Compare with invertebrates from a contrasting locality e.g Australia.
Observe and record how plants change over time according to the season.
Construct and compare simple food chains from different habitats.
Plant seeds, hypothesise and record observations daily/over short periods of time
Investigate locations to find best growing conditions for green plants; predict what may happen given different growing conditions

Houghton Primary School: SCIENCE

Y2

YEAR 2 B: KNOWLEDGE

AUTUMN TERM B Y2: OUR WORLD: LAND

By the end of this term children will know:

The names animals that are herbivores, carnivores and omnivores and link this to their diet.
That vertebrates have backbones.
Name the five senses and know ways that other creatures' senses differ from humans
About and explain different animal life cycles (eg: human, whale, bird, snake)
What different animals need in order to survive after learning about their life cycle (eg: human, whale, bird, snake)
We need to look after our bodies and minds; plan and explain how they have personal responsibility for their own mental and physical wellbeing.

SPRING TERM B Y2: BUILD

By the end of this term children will know:

Name the material of a variety of familiar everyday objects,;
The names of different materials; and their origins (natural, manmade, manufactured)
And use correctly the technical vocabulary: rigid, flexible, transparent, translucent and opaque.

SUMMER TERM B: MINIBEASTS

By the end of this term children will know:

Name and describe invertebrates in our local environment.
Identify and name some familiar local plants (wildflowers and trees);
Label and explain the function of the main parts of a flowering plant, including trees
Describe (micro)habitats in our locality eg: woodland, meadow, river, pond; think about and discuss interdependence within (micro)habitats

Houghton Primary School: SCIENCE

Y3

YEAR 3 SKILLS

AUTUMN TERM

Children working within year group expectations will be able to:

Classify / group foods depending on their nutritional content.
Name some major bones and relate them to their function e.g. support, protection etc.
Compare and contrast the skeletons of different animals.
Name some types of rocks and describe some of their main characteristics.
Classify and sort rocks using appropriate scientific vocabulary and recognise the 3 main groups.
Devise simple tests (e.g. scratch test to explore the hardness of rocks) to explore the properties of rocks and rank the rocks in order.
Link rocks changing over time (the rock cycle) with their properties e.g. soft rocks- erode
Explain what fossils are and how they formed.
Understand the soils are composed of a variety of organic matter.

SPRING TERM

Children working within year group expectations will be able to:

Give examples of forces in everyday life.
Devise simple tests to explore how objects move differently on different surfaces. And use their results to explain what they have found out.
Name a range of magnets and describe how the north and south pole repel or attract.
Sort materials into magnetic and non-magnetic, including different types of metals.
Carry out simple investigations to explore the properties of magnets.

SUMMER TERM

Children working within year group expectations will be able to:

Name and explain the functions of the parts of a flowering plant.
Describe the major stages of flower cycle using the correct scientific terminology e.g. germination, pollination.
Recognise how a seed's design relates to its method of dispersal.
Explain that darkness is the absence of light.
Discuss, sort, classify materials according to their properties e.g. reflective, translucent etc..
Set up simple investigations to explore how shadow size changes.

Houghton Primary School: SCIENCE

Y3

YEAR 3 KNOWLEDGE

AUTUMN TERM

By the end of this term children will know:
That humans can not make their own food and that the right types and amounts of nutrition must be obtained through their diet.
That humans and some other animals have skeletons which support their bodies, allow them to move and provide protection.
That different rocks can look different and have different physical properties.
That fossils are formed when things that have lived are trapped in rock and describe this process in simple terms.
The composition of soil and that it is a mixture of organic matter and eroded rock.

SPRING TERM

By the end of this term children will know:
That objects move differently on different surfaces, depending on the physical properties of that surface.
That magnetic forces. can act of our a distance whilst some forces require contact between two objects.
That magnets have two poles and are able to attract and repel each other and some other materials. And name some magnetic and nonmagnetic materials.
The names of some magnetic materials

SUMMER TERM

By the end of this term children will know:
The names and functions of different parts of a flowering plant.
That are plant requires; air, light, water, space and nutrients to grow healthy and strong. And that these requirements vary from plant to plant.
That water is transported from the roots through the stem and into the leaves and flowers of a plant
That flowers play an essential role in the plants life cycle and the main stages including: pollination, seed formation and dispersal.
That light from the sun can be dangerous and that there are ways to protect their eyes.

Houghton Primary School: SCIENCE

Y4

YEAR 4 SKILLS

AUTUMN TERM

Children working within year group expectations will be able to:

Sort objects according to whether or not they require electricity to work.
Make a simple series circuit recognising that all components must be linked along the circuit for it to work.
Identify if a material is an electrical conductor or insulator and group materials accordingly.
Create a simple switch using their knowledge of materials and electricity.
Observe how sound is made by vibrations moving through a medium e.g. air, water, a solid object and into our ears.
Investigate how different sounds are made e.g. high / low pitch, loud / quiet and draw simple conclusions.
Ask questions about what sounds are and how they vary in pitch and volume.

SPRING TERM

Children working within year group expectations will be able to:

Sort materials according to their state and recognise when items are composed of more than 1 state e.g. fizzy drinks.
Recognise through observations that some materials change between states when heated or cooled.
Investigate
Measure temperature accurately to the nearest whole degree centigrade using a range of equipment e.g. thermometers and data handlers.
Research the temperatures, at which, a variety of materials change state e.g. wax, rock, different metals.
Sort teeth according to their own or given criteria.
Research the function of different organs in the human digestive system.

SUMMER TERM

Children working within year group expectations will be able to:

Investigate how evaporation and temperature are related.
Record results and make simple conclusions.
Research simple food chains identifying the predator, prey, consumer, producer etc.
Group / classify living things according to own criteria which they can identify.
Use classification key correctly name plants and animals living in the local environment.
Construct their own simple keys for a small selection of plants or animals.
Research some ways in which our environment is changing and what it's impact may be on the local wildlife.

Houghton Primary School: SCIENCE

Y4

YEAR 4 KNOWLEDGE

AUTUMN TERM

By the end of this term children will know:
That sounds are made by vibrations and travel through different media.
That as the volume of a sound increases so does the strength of vibrations, e.g. banging a drum harder will create larger vibrations and a louder sound.
That the pitch of a sound is related to the characteristics of the object that made it, e.g. the thickness of an elastic band producing a high or low note when plucked.
The name of a range of common appliances that use electricity.
How to construct a simple series circuit and name the component parts.
How a switch works.
That metals are good conductors and name some other materials which are insulators.

SPRING TERM

By the end of this term children will know:
The meaning of the terms solid, liquid and gas.
That some materials can change between states when heated or cooled and know the temperature in degrees centigrade when this happens.
The name and function of some parts of the digestive system including; mouth, oesphagus, stomach, intestines.
The different types of teeth humans have and how their shape is related to their function.

SUMMER TERM

By the end of this term children will know:
The meaning of the terms evaporation and condensation and that they are key processes in the water cycle.
Some food chains and identify the producer, predator, and prey.
That living things can be grouped in different ways.
How to use a classification key to group and identify living things in the local and wider environment.
Ways in which environments can change and
how this can pose a danger to living things.

Houghton Primary School: SCIENCE

Y5

YEAR 5 SKILLS

AUTUMN TERM Y5

Children working within year group expectations will be able to:

Explain day and night using the solar system
Investigate the solar system
Understand the moon and its phases and how this occurs
Explore the different explanations of our solar system (heliocentric/geocentric)
Investigate day and night in different parts of the world
Describe the effects of gravity and use force meters design and make a variety of parachutes and carry out fair tests to determine which designs are the most effective.
Make predictions and test boats of different shapes to see water resistance
Examine friction in everyday life and explore the use of materials.
Explore the effects of levers, gears and pulleys on a job.

SPRING TERM Y5

Children working within year group expectations will be able to:

Classify materials according to different criteria use scientific vocabulary
Explore different materials such as salt, sugar, washing powder in water
Explore reversible and irreversible changes in materials (i,e salt)
Find out how new chemists made new materials (Spencer Silver-sticky notes)
Use materials to answer questions about its properties such as which material would be best for insulation?

SUMMER TERM Y5

Children working within year group expectations will be able to:

Understand the gestation of animals and compare to humans
Explain changes during human life through a timeline for example
Look at gestation of a baby
Observe life cycles in a variety of living things
Find out about the work of naturalists such as David Attenborough and Jane Goodall
Find out about the sexual and asexual reproduction in plants and animals
Compare life cycles in local environment and another area (Scandinavian region)
Observe changes of plants/animals over a period of time
Grow new plants from parent (i.e root cuttings, seeds, stem, tubers, bulbs)
Follow a creature through its life cycle (butterfly/ ladybird/chick)

Houghton Primary School: SCIENCE

Y5

YEAR 5 KNOWLEDGE

AUTUMN TERM Y5

By the end of this term children will know:
The movement of the Earth in relation to the Sun and How we get day and night
Different parts of the Earth experience daylight at different times
The phases of the moon
That the moon orbits the Earth
What gravity is and what it does
The difference between mass and weight
Forces change the motion of an object
Pulleys reduce the amount of force needed to lift a load.
Gears or cogs are used to change speed, direction or force of a motion.
Levers can be sued to make a small force lift a lighter load.

SPRING TERM Y5

By the end of this term children will know:
That materials can be grouped based on their properties using more complex vocabulary
What are thermal insulators and conductors
What are electrical insulators and conductors
What is dissolving
That materials can be separated after they have been mixed
What filtration is
Reversible and irreversible changes

SUMMER TERM Y5

By the end of this term children will know:
Reproduction is when an animal or plant produces one or more individuals similar to itself
The process of fertilisation.
The process of metamorphosis
The main stages of the human life cycle
What puberty is.

Houghton Primary School: SCIENCE

Y6

YEAR 6 SKILLS

AUTUMN TERM Y6

Children working within year group expectations will be able to:

Talk about how scientific ideas and understanding of light have developed over time referring to the work of Aristotle and Plato.
Make their own decisions about what observations to make, what measurements to use and how long to make them for.
Use oral and written forms such as displays and other presentations to report conclusions, causal relationships and explanations of degrees of trust in results.
Look for different causal relationships in their data and identify evidence that refutes or supports their claim.
Talk about how scientific ideas relating to the circulatory system have developed over time referring to the work of Aristotle and Galen.
Use relevant Scientific language and illustrations to communicate their understanding and justify their scientific ideas.
Select and plan the most appropriate type of scientific enquiry to use and answer scientific questions such as 'What happens to our pulse rate as we exercise?'
Make their own decisions about what observations to make, what measurements to use and how long to make them for.
Decide how to record their data using tables and line graphs.
Look for different causal relationships in their data and identify evidence that refutes or supports their claim.
Use their results to make predictions and identify when further observations, comparative and fair tests might be needed.

SPRING TERM Y6

Children working within year group expectations will be able to:

Talk about how scientific ideas relating to electricity have developed over time referring to the work of Franklin, Edison, Volto and Faraday.
Select and plan the most appropriate type of scientific enquiry to use and answer scientific questions such as 'What happens to the brightness of a bulb when I add more cells?'
Look for different causal relationships in their data and identify evidence that refutes or supports their claim.
Use relevant Scientific language and illustrations to communicate their understanding and justify their scientific ideas.

SUMMER TERM Y6

Children working within year group expectations will be able to:

Find out more about how living things have changed over time.
Explain how the findings of Charles Darwin, Mary Annings and Alfred Wallace developed our understanding of evolution.
Understand how characteristics are passed down from parents to their offspring.
Analyse how some variations over time may increase or decrease an animal's likelihood of survival.
Talk about how scientific ideas relating to Taxonomy have developed over time referring to the work of Aristotle and Carl (Carolus) Linnaeus.
Use and develop keys and other information records to identify and describe living things, identify patterns that might be found in the natural environment.
Use oral and written forms such as displays and other presentations to report their classification decisions

Houghton Primary School: SCIENCE

Y6

YEAR 6 KNOWLEDGE

AUTUMN TERM Y6

By the end of this term children will know:
That Aristotle believed that light was some kind of disturbance in the air, one of his four 'elements' that composed matter.
That Plato believed that the eyes projected beams of light, like a flashlight which illuminated objects in front of them. that light travels in straight lines
That we see things because objects give out or reflect light.
That shadows have the same shape as the objects which cast them.
That Aristotle believed that the heart was the most important organ and was the centre of intelligence, motion and sensation.
That Galen believed that blood did not return to the heart and was consumed by it. Also know that he also discovered that arteries carried blood.
The main parts of the human circulatory system including the heart, lungs and blood vessels.
The function of the heart.
The composition and function of blood.
That exercise raises their heart rate as blood is pumped quicker around the body to supply the muscles with oxygen and nutrients and collect waste products.
The effect that bad diet and lifestyles can have on the body.
That nutrients and water are transported through plants through the xylem.

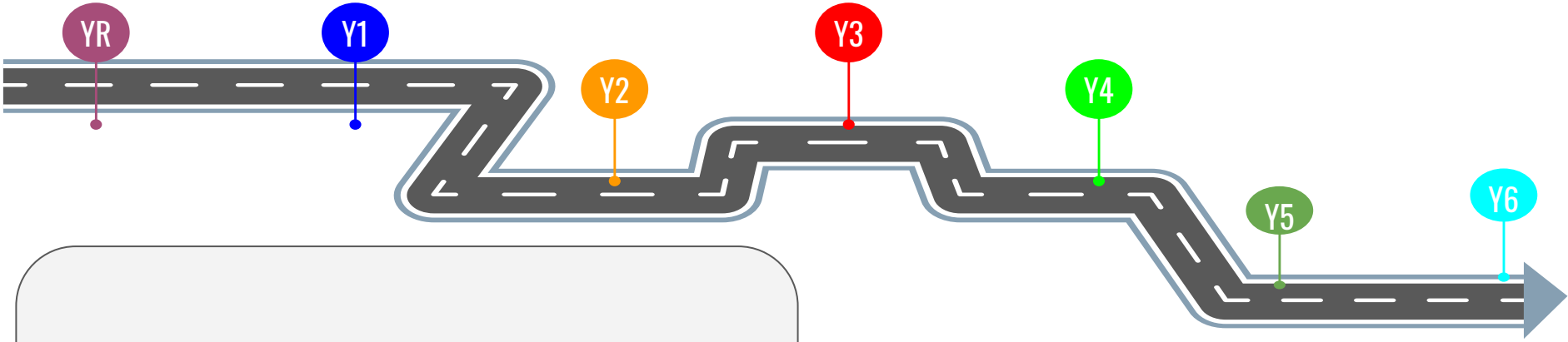
SPRING TERM Y6

By the end of this term children will know:
That Franklin Edison is credited by some for discovering electricity with his kite experiment
That Alessandro Volta created the first battery.
That Michael Faraday was the first to realize that an electric current could be produced by passing a magnet through a copper wire.
In Thomas Edison invented the lightbulb.
The universal symbols used to record circuits using the correct symbols.

SUMMER TERM Y6

By the end of this term children will know:
That Mary Anning's discovered fossils in Dorset which were studied by Palaeontologists.
That Charles Darwin made many discoveries and observations on his journey on HMS Beagle to the Galapagos Islands.
That Charles Darwin published 'On the Origin of Species by Means of Natural Selection' which explained his theory of evolution.
That characteristics can be passed from parents to their offspring-
That animals and plants adapt to their environments e.g. arctic foxes, camels, cactus, and that animals and plants adapt to be more successful.
Taxonomy is derived from the Ancient Greek τάξις (taxis) 'arrangement', and -νομία (-nomia) 'method') and is the scientific study of naming, defining (circumscribing) and classifying groups of biological organisms based on shared characteristics.
That Aristotle developed the first system of classification of animals and plants
Know that Carl Linnaeus divided animals into seven classes: 1. mammals, 2. Birds, 3.amphibians, 4. Fish, 5. Insects, 6. Worms.
That keys can be used to identify living things.

Houghton Primary School: SCIENCE



SCIENCE CURRICULUM **IMPACT:**

ASSESSMENT

As a result of teaching our Science curriculum what are our children be able to do (skills) and what do they know (knowledge)?

Assessment Statement:

Assessment of science **skills** is ongoing (formative) during lessons. Teachers use the skills statements to assess and use this responsively to support children as necessary.

At the end of each unit teachers assess children's **knowledge** through low stakes quizzes and similar activities. Knowledge is revisited over the course of the year to support long term memory and retrieval.