NOTE: The Science curriculum is planned on a two-year rolling programme for EYFS/KS1 and a three-year rolling programme for Y3/4/5. Year 6 cover the content each year, therefore the Year 6 content is only shown on Year A. Please see the 'Whole School Science Programme' for more information.

YEAR C Curriculum Map Science Spring: Properties and change of materials Summer 1: Light Autumn 2: Forces – magnets Autumn 2: Living things and their habitats Summer 2: Animals, including humans (stages of growth) Links to previous Learning Links to previous Learning Links to previous Learning Forces: Magnetism I can identify and compare the suitability of a variety of everyday Explore how things work. (Nursery – Light) Materials materials, including wood, metal, plastic, glass, brick, rock, paper Talk about the differences in materials and changes they notice. I know everyday materials, including wood, plastic, glass, metal, water, and cardboard for particular uses. (Y2 - Uses of everyday (Nursery – Light) and rock. materials) Describe what they see, hear and feel whilst outside. (Reception-Light) I know the physical properties of a variety of everyday materials. I know how the shapes of solid objects made from some materials Identify, name, draw and label the basic parts of the human body and can be changed by squashing, bending, twisting and stretching. I know that there are human-made and natural materials. say which part of the body is associated with each sense. (Y1 - Animals, (Y2 - Uses of everyday materials) including humans) I can compare and group together a variety of everyday materials Living Things and their Habitats Describe the simple physical properties of a variety of everyday on the basis of whether they are attracted to a magnet, and I know the differences between things that are living, dead, and things materials. (Y1 - Materials) identify some magnetic materials. (Y3 - Forces and magnets) that have never been alive I know that most living things live in habitats to which they are suited Animals including Humans: Stages of Growth (As this is a Year 5 topic, this will be developmentally appropriate for and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each Year 3 children) I know that humans grow and change (e.g. babies, children, teenagers, other I know and can name a variety of plants and animals in their habitats, adults, elderly). including micro-habitats I know the external names for boys and girl's genitalia (PSHE) I can describe how animals obtain their food from plants and other Notice that animals, including humans, have offspring which grow into animals, using the idea of a simple food chain, and identify and name adults. (Y2 - Animals, including humans) different sources of food Knowledge Knowledge Knowledge Forces: Magnetism: **Properties and changes of materials** Light and Shadows: **Big Question Big Question** I know that materials have different uses depending on their How does a magnet work? How does light travel? properties and state (liquid, solid, gas). Are all materials magnetic? I know that properties include hardness, transparency, electrical I know that we see objects because our eyes can sense light. and thermal conductivity and attraction to magnets. I know that a force is a push or a pull. I know that dark is the absence of light. I know that some materials will dissolve in a liquid and form a I know that when an object moves on a surface, the texture of the I know that we cannot see anything in complete darkness. solution while others are insoluble and form sediment. surface and the object affect how it moves. It may help the object to I know that some objects, for example, the sun, light bulbs and candles, I know that mixtures can be separated by filtering, sieving and move better or it may hinder its movement e.g. ice skater compared to are sources of light. evaporation. walking on ice in normal shoes. I know that some changes to materials such as dissolving, mixing I know that objects are easier to see if there is more light. I know a magnet attracts magnetic material. Iron and nickel and other and changes of state are reversible. I know that some surfaces reflect light. I know that some changes such as burning wood, rusting and materials containing these, e.g. stainless steel, are magnetic. I know that objects are easier to see when there is less light if that are mixing vinegar with bicarbonate of soda result in the formation of I know the strongest parts of a magnet are the poles. reflective. new materials and these are not reversible. I know that magnets have two poles– a north pole and a south pole. I know that the light from the sun can damage our eyes and therefore I know that if two like poles, e.g. two north poles, are brought together we should not look directly at the sun and can protect our eyes by they will push away from each other - repel. If two unlike poles, e.g. a wearing sunglasses or sunhats in bright light. that I need light in order to north and south, are brought together they will pull together – attract. see things, and that dark is the absence of light. I know that some forces need contact between two objects, but I know that light is reflected from surfaces. magnetic forces can act at a distance. I know that light from the sun can be dangerous and that there are ways I know what metal is found in a magnet to protect their eyes. I know why a magnet always point north I know that shadows are formed on a surface when an opaque or translucent object is between a light source and the surface and blocks some of the light. **Living Things and their Habitats**

(As this is a Year 5 topic, this will be developmentally appropriate for Year 3 children)

I know that environments can change and that this can sometimes pose dangers to living things.

I know that as part of their life cycle, plants and animals reproduce.

I know that most animals reproduce sexually.

I know that this involves two parents where the sperm from the male fertilises the female egg.

I know that animals, including humans, have offspring which grow into adults. In humans and some animals, these offspring will be born live, such as babies or kittens, and then grow into adults.

I know that in other animals, such as chickens or snakes, there may be eggs laid that hatch to young which then grow to adults.

I know that some young undergo a further change before becoming adults e.g. caterpillars to butterflies.

I know this is called a metamorphosis.

I know plants reproduce both sexually and asexually.

I know that bulbs, tubers, runners and plantlets are examples of asexual plant reproduction which involves only one parent.

I know that gardeners may force plants to reproduce asexually by taking cuttings.

I know that sexual reproduction occurs through pollination, usually involving wind or insects.

Key Skills

Forces: Magnetism:

Big Question: How does a magnet work? Are all materials magnetic?

Working Scientifically

Engaging in practical enquiry to answer questions - Setting up simple practical enquiries, comparative and fair tests

Recording and presenting evidence, gathering and recording data to help in answering questions. Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.

I can name a range of types of magnets and show how the poles attract	
and repel	

I can explain how a magnet works

I can draw diagrams using arrows to show the attraction and repulsion between the poles of magnets

I can carry out investigations to explore how objects move on different surfaces e.g. spinning tops/coins, rolling balls/cars, clockwork toys, soles of shoes etc.

I can explore what materials are attracted to a magnet.

I can classify materials according to whether they are magnetic.

I can explore the way that magnets behave in relation to each other.

I can use a marked magnet to find the unmarked poles on other types of magnets.

I can explore how magnets work at a distance e.g. through the table, in water, jumping paper clips up off the table.

Key Skills

Properties and changes of materials

Big Question: How can we clean our dirty water? How does the temperature of tea affect how long sugar takes to dissolve? (Updated March 2023)

Working Scientifically

Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers

Setting up simple practical enquiries, comparative and fair tests

I can investigate the properties of different materials in order to recommend materials for particular functions depending on these properties e.g. test waterproofness and thermal insulation to identify a suitable fabric for a coat.

I can explore adding a range of solids to water and other liquids e.g. cooking oil, as appropriate.

I can investigate rates of dissolving by carrying out comparative and fair test.

I can separate mixtures by sieving, filtering and evaporation, choosing the most suitable method and equipment for each mixture.

I can explore a range of non-reversible changes e.g. rusting, adding fizzy tablets to water, burning.

I can carry out comparative and fair tests involving non-reversible changes e.g. What affects the rate of rusting? What affects the amount of gas produced?

I know the size of the shadow depends on the position of the source, object and surface.

Animals incl Humans: Stages of Growth (As this is a Year 5 topic, this will be developmentally appropriate for Year 3 children)

Big Question: How do humans change in their lifetime?

I know when babies are young, they grow rapidly. I know they are very dependent on their parents. I know as they develop, they learn many skills.

Key Skills Light and Shadows: **Big Question** How does light travel?

Working Scientifically Using straightforward scientific evidence to answer questions or to support their findings Identifying differences, similarities or changes related to simple scientific *ideas and processes* Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions

absence of light

is able to do

I can describe how we see objects in light and can describe dark as the

I can state that it is dangerous to view the sun directly and state precautions used to view the sun, for example in eclipses I can define transparent, translucent and opaque I can describe how shadows are formed

Animals incl Humans: Stages of Growth Big Question: How do humans change in their lifetime?

I can explain how a baby changes physically as it grows, and also what it

I can devise an investigation to test the strength of magnets. I can devise an experiment to test the strength of 5 magnets, label them a-e and then test how many identical paperclips (in a chain) are attracted.

I can show results in a pictogram/bar graph and write true or false

Scientists

William Gilbert Doctor who developed the theory of magnetism

Eric Laithwaite

(Electrical Engineer who developed the technology behind the maglev train)

Living Things and their Habitats

I can use secondary sources and, where possible, first-hand observations to find out about the life cycle of a range of animals. I can compare the gestation times for mammals and look for patterns e.g. in relation to size of animal or length of dependency after birth. I can look for patterns between the size of an animal and its expected life span.

I can grow and observe plants that reproduce asexually e.g. strawberries, spider plants, potatoes.

I can take cuttings from a range of plants e.g. African violet, mint. I can plant bulbs and then harvest to see how they multiply. I can use secondary sources to find out about pollination.

Scientists

I can research David Attenborough's contribution to our understanding of living things and their habitats.

Vocabulary

Forces: Magnetism:

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

Living Things and their Habitats

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

Cultural Opportunities

Forces: Magnetism: TBC

Living Things and their Habitats TBC

I can research new materials produced by chemists e.g. Spencer Silver (glue of sticky notes) and Ruth Benerito (wrinkle free cotton).

Scientist

I can find out about how Ruth Benerito created 'wrinkle-free' cotton

https://www.sciencehistory.org/historical-profile/ruth-benerito



Scientist I can find out about Daniel Farenheit



Vocabulary

Properties and changes of materials

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

Cultural Opportunities

Properties and changes of materials TBC

Vocabulary Light

Cultural Opportunities <u>Light</u> programme/light

light, light source, dark, absence of light, transparent, translucent, opaque, shiny, matt, surface, shadow, reflect, mirror, sunlight, dangerous, white light, visible light, colour, spectrum, refraction light source, energy, reflector, reflect, predict, investigate, reflective materials Reflect, mirror, reflection, image, concave, convex, shadow Light source, opaque, translucent, transparent, shadow, measure

Animals incl Humans: Stages of Growth Puberty - the vocabulary to describe sexual characteristics

https://www.scienceandindustrymuseum.org.uk/learning/schools-

Animals incl Humans: Stages of Growth

		ТВС
Key values	Key values	Key va
School Values: Happy, Healthy and Secure. Confident and Independent.	School Values: Happy, Healthy and Secure. Confident and	Schoo
Respectful and Caring. Inspired and Excited to Learn. Teamwork.	Independent. Respectful and Caring. Inspired and Excited to	Respe
British Values: The rule of law. Individual liberty. Mutual respect for and	Learn. Teamwork.	British
tolerance of those with different faiths and beliefs and for those	British Values: The rule of law. Individual liberty. Mutual respect	tolera
without faith. Democracy.	for and tolerance of those with different faiths and beliefs and for	withou
Christian Star Qualities: Love, Joy, Peace, Patience, Kindness,	those without faith. Democracy.	Christ
Gentleness, <mark>Self-Control,</mark> Faithfulness, Goodness.	Christian Star Qualities: Love, Joy, Peace, Patience, Kindness,	Gentle
	Gentleness, Self-Control, <mark>Faithfulness,</mark> Goodness.	
Book List & Resources	Book List & Resources	Book
Forces: Magnetism:	Properties and changes of materials	<u>Light</u>
What is a magnet? - BBC Bitesize		<u>Devel</u>
Which metals and materials are magnetic? - BBC Bitesize	https://explorify.uk/teaching-support/teaching-science/states-	Light -
Forcestackle the tricky bits - Explorify	of-matter-tackle-the-tricky-bits	Explo
https://developingexperts.com/s/unit-library/units/496	<u>Developing Experts – properties of materials (Year 5)</u>	https:
https://explorify.uk/en/activities/have-you-ever/used-a-magnet	Properties and change of materials - KS2 Science - BBC Bitesize	light-u
https://explorify.uk/en/activities/what-if/you-had-magnets-for-		https:
fingers		3-light
https://explorify.uk/en/activities/whats-going-on/mighty-magnets		https:
https://www.twinkl.co.uk/resource/tp2-s-157-planit-science-year-3-		https:
forces-and-magnets-unit-pack		
https://www.stem.org.uk/resources/community/collection/12391/year-		Anima
3-forces-and-magnets https://www.bbc.co.uk/bitesize/articles/zg6q96f		Devel
https://www.bbc.co.uk/bitesize/topics/zgbq96i		BBC b
https://www.bbc.co.uk/bitesize/topics/zyttyru		Bitesiz
https://www.techagekids.com/2017/05/william-gilbert-facts-resources-		Explo
kids.html		https:
		chang
Living Things and their Habitats		
Living things and their habitats - KS2 Science - BBC Bitesize		
Living things and their habitatsexplore with your class - Explorify		
Developing Experts - Living things and their habitats (Year 5) https://explorify.uk/en/activities/odd-one-out/looking-after-baby		

YEAR C				
Autumn 2: Forces – magnets Autumn 2: Living things and their habitats		Spring		Links to previous Le
Forces: Magnetism: Electricity Materials I know everyday materials, including wood, plastic, glass, metal, water, and rock. I know the physical properties of a variety of everyday materials. I know that there are human-made and natural materials. Living Things and their Habitats I know that living things can be grouped (classified) in different ways according to their features.		Properties and changes of 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. (Y2 - Uses of everyday materials) Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. (Y2 - Uses of everyday materials) 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. (Y3 - Forces and magnets)		Explore how things of Talk about the differ (Nursery – Light) Describe what they Identify, name, draw say which part of the including humans) Describe the simple materials. (Y1 - Mate Animals including H
	Autumn 2: Living things and their habitatsLinks to previous LearningForces: Magnetism:ElectricityMaterialsI know everyday materials, including wood, plastic, glass, metal, water, and rock.I know the physical properties of a variety of everyday materials.I know the physical properties of a variety of everyday materials.I know that there are human-made and natural materials.Living Things and their HabitatsI know that living things can be grouped (classified) in different ways	Autumn 2: Living things and their habitatsLinks to previous LearningForces: Magnetism:ElectricityMaterialsI know everyday materials, including wood, plastic, glass, metal, water, and rock.I know the physical properties of a variety of everyday materials.I know the physical properties of a variety of everyday materials.I know that there are human-made and natural materials.Living Things and their HabitatsI know that living things can be grouped (classified) in different ways	Autumn 2: Forces – magnets Autumn 2: Living things and their habitatsSpringLinks to previous LearningLinks to previous LearningForces: Magnetism: Electricity MaterialsLinks to previous LearningI know everyday materials, including wood, plastic, glass, metal, water, and rock. I know the physical properties of a variety of everyday materials. I know that there are human-made and natural materials.Links to previous LearningLiving Things and their Habitats I know that living things can be grouped (classified) in different waysFroperties and changes of materials. (Y2 - Uses of everyday materials)Living things can be grouped (classified) in different waysCompare and group together a variety of everyday materials. (Y3 - Forces and magnets)	Autumn 2: Forces – magnets Autumn 2: Living things and their habitatsSpringLinks to previous LearningLinks to previous LearningForces: Magnetism: Electricity MaterialsLinks to previous LearningI know everyday materials, including wood, plastic, glass, metal, water, and rock. I know the physical properties of a variety of everyday materials. I know that there are human-made and natural materials.Links to previous LearningLiving Things and their Habitats I know that living things can be grouped (classified) in different waysSpring

Happy, Healthy and Secure. Confident and Independent. ad Caring. Inspired and Excited to Learn. Teamwork.
The rule of law. Individual liberty. Mutual respect for and those with different faiths and beliefs and for those
Democracy.
r Qualities: Love, Joy, Peace, Patience, Kindness, Self-Control, Faithfulness, Goodness.

Resources

Experts – Light (Year 3)

:ience - BBC Bitesize
.Light up the dark - Explorify
.twinkl.co.uk/resource/tp2-s-122-planit-science-year-3-

.stem.org.uk/resources/community/collection/12719/year-

.bbc.co.uk/bitesize/topics/zbssgk7 room.thenational.academy/units/light-dark-250b

Humans: Stages of Growth Experts – Stages of Growth Year 5 Id - How do humans change during their lifetime? - BBC

<u>.</u> The average lifespan of a human was 200? - Explorify prify.uk/en/activities/have-you-ever/noticed-how-babiesey-become-toddlers

Summer

Learning

gs work. (Nursery – Light)

ferences in materials and changes they notice.

ey see, hear and feel whilst outside. (Reception– Light) raw and label the basic parts of the human body and the body is associated with each sense. (Y1 - Animals,

ble physical properties of a variety of everyday laterials)

Humans: Stages of Growth

I know that classification keys can be used to identify and name living things.

I know that living things live in a habitat which provides an environment to which they are suited (Year 2 learning).

I know that these environments may change naturally e.g. through flooding, fire, earthquakes etc.

I know that Humans also cause the environment to change. This can be in a good way (i.e. positive human impact, such as setting up nature reserves) or in a bad way (i.e. negative human impact, such as littering). I know that these environments also change with the seasons; different living things can be found in a habitat at different times of the year.

Knowledge

Forces: Magnetism: **Big Question** How does a magnet work? Are all materials magnetic?

I know that a force is a push or a pull.

I know that when an object moves on a surface, the texture of the surface and the object affect how it moves. It may help the object to move better or it may hinder its movement e.g. ice skater compared to walking on ice in normal shoes.

I know a magnet attracts magnetic material. Iron and nickel and other materials containing these, e.g. stainless steel, are magnetic.

I know the strongest parts of a magnet are the poles.

I know that magnets have two poles– a north pole and a south pole. I know that if two like poles, e.g. two north poles, are brought together they will push away from each other – repel. If two unlike poles, e.g. a north and south, are brought together they will pull together – attract. I know that some forces need contact between two objects, but magnetic forces can act at a distance.

I know what metal is found in a magnet

I know why a magnet always point north

Living Things and their Habitats

I know that environments can change and that this can sometimes pose dangers to living things.

I know that as part of their life cycle, plants and animals reproduce. I know that most animals reproduce sexually.

I know that this involves two parents where the sperm from the male fertilises the female egg.

I know that animals, including humans, have offspring which grow into adults.

I know that in humans and some animals, these offspring will be born live, such as babies or kittens, and then grow into adults.

I know that in other animals, such as chickens or snakes, there may be eggs laid that hatch to young which then grow to adults.

I know that some young undergo a further change before becoming adults e.g. caterpillars to butterflies.

I know that this is called a metamorphosis.

I know that plants reproduce both sexually and asexually.

Knowledge

Properties and changes of materials

I know that some materials will dissolve in liquid to form a solution and describe how to recover a substance from a solution. I know that materials have different uses depending on their properties and state (liquid, solid, gas).

I know that properties include hardness, transparency, electrical and thermal conductivity and attraction to magnets.

I know that some materials will dissolve in a liquid and form a solution while others are insoluble and form sediment.

I know that mixtures can be separated by filtering, sieving and evaporation.

I know that some changes to materials such as dissolving, mixing and changes of state are reversible, but some changes such as burning wood, rusting and mixing vinegar with bicarbonate of soda result in the formation of new materials and these are not reversible.

adults, elderly).

Knowledge

Light and Shadows: **Big Question** How does light travel?

are sources of light.

reflective.

see things, and that dark is the absence of light. to protect their eyes. some of the light. object and surface.

Animals incl Humans: Stages of Growth **Big Question: How do humans change in their lifetime?**

This needs to be taught alongside PSHE

I know that humans grow and change (e.g. babies, children, teenagers,

I know the external names for boys and girl's genitalia (PSHE) Notice that animals, including humans, have offspring which grow into adults. (Y2 - Animals, including humans)

- I know that we see objects because our eyes can sense light.
- I know that dark is the absence of light.
- I know that we cannot see anything in complete darkness.
- I know that some objects, for example, the sun, light bulbs and candles,
- I know that objects are easier to see if there is more light.
- I know that some surfaces reflect light.
- I know that objects are easier to see when there is less light if that are
- I know that the light from the sun can damage our eyes and therefore we should not look directly at the sun and can protect our eyes by wearing sunglasses or sunhats in bright light. that I need light in order to
- I know that light is reflected from surfaces.
- I know that light from the sun can be dangerous and that there are ways
- I know that shadows are formed on a surface when an opaque or
- translucent object is between a light source and the surface and blocks

I know the size of the shadow depends on the position of the source,

- I know that when babies are young, they grow rapidly.
- I know they are very dependent on their parents.
- I know as they develop, they learn many skills. At puberty, a child's body changes and develops primary and secondary sexual characteristics. I know that this enables the adult to reproduce.

I know that bulbs, tubers, runners and plantlets are examples of asexual plant reproduction which involves only one parent.

I know that gardeners may force plants to reproduce asexually by taking cuttings.

I know that sexual reproduction occurs through pollination, usually involving wind or insects.

Key Skills

Forces: Magnetism: **Big Question** How does a magnet work? Are all materials magnetic?

Working Scientifically

Engaging in practical enquiry to answer questions - Setting up simple practical enquiries, comparative and fair tests

Recording and presenting evidence, gathering and recording data to help in answering questions. Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.

I can name a range of types of magnets and show how the poles attract and repel

I can draw diagrams using arrows to show the attraction and repulsion between the poles of magnets

I can explore what materials are attracted to a magnet.

I can classify materials according to whether they are magnetic.

I can explore the way that magnets behave in relation to each other. I can use a marked magnet to find the unmarked poles on other types of

magnets.

I can explore how magnets work at a distance e.g. through the table, in water, jumping paper clips up off the table.

I can devise an investigation to test the strength of magnets.

I can devise an experiment to test the strength of 5 magnets, label them a-e and then test how many identical paperclips (in a chain) are attracted.

I can show results in a pictogram/bar graph and write true or false

Scientists

William Gilbert-the theory of magnetism

I can observe that some forces need contact between two objects, but magnetic forces can act at a distance.

I can observe how magnets attract or repel each other and attract some materials and not others.

I can 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.

I can describe magnets as having two poles.

I can predict whether two magnets will attract or repel each other, depending on which poles are facing.

Key Skills

Properties and changes of materials

Big Question: How can we clean our dirty water? How does the temperature of tea affect how long sugar takes to dissolve? (Updated March 2023)

Working Scientifically

Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers

Setting up simple practical enquiries, comparative and fair tests

I can investigate the properties of different materials in order to recommend materials for particular functions depending on these properties e.g. test waterproofness and thermal insulation to identify a suitable fabric for a coat.

I can explore adding a range of solids to water and other liquids e.g. cooking oil, as appropriate.

I can investigate rates of dissolving by carrying out comparative and fair test.

I can separate mixtures by sieving, filtering and evaporation, choosing the most suitable method and equipment for each mixture.

I can explore a range of non-reversible changes e.g. rusting, adding fizzy tablets to water, burning.

I can carry out comparative and fair tests involving non-reversible changes e.g. What affects the rate of rusting? What affects the amount of gas produced?

I can research new materials produced by chemists e.g. Spencer Silver (glue of sticky notes) and Ruth Benerito (wrinkle free cotton).

<u>Scien</u>tist

I can find out about how Ruth Benerito created 'wrinkle-free' cotton

https://www.sciencehistory.org/historical-profile/ruth-benerito



Scientist I can find out about Daniel Farenheit

Key Skills

Light and Shadows: **Big Question** How does light travel?

Working Scientifically support their findings ideas and processes

absence of light

is able to do puberty

Using straightforward scientific evidence to answer questions or to

Identifying differences, similarities or changes related to simple scientific

Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions

I can describe how we see objects in light and can describe dark as the

I can state that it is dangerous to view the sun directly and state precautions used to view the sun, for example in eclipses I can define transparent, translucent and opaque I can describe how shadows are formed

Animals incl Humans: Stages of Growth

Big Question: How do humans change in their lifetime? I can explain how a baby changes physically as it grows, and also what it

I can explain the changes that takes place in boys and girls during

Eric Laithwaite-Electrical Engineer who developed the technology behind the maglev train

Living Things and their Habitats

I can use secondary sources and, where possible, first-hand observations to find out about the life cycle of a range of animals. I can compare the gestation times for mammals and look for patterns e.g. in relation to size of animal or length of dependency after birth. I can look for patterns between the size of an animal and its expected life span.

I can grow and observe plants that reproduce asexually e.g. strawberries, spider plants, potatoes.

I can take cuttings from a range of plants e.g. African violet, mint. I can plant bulbs and then harvest to see how they multiply. I can use secondary sources to find out about pollination.

Scientists

I can research David Attenborough's contribution to our understanding of living things and their habitats.

Vocabulary

Forces: Magnetism:

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

Living Things and their Habitats

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

Cultural Opportunities

Forces: Magnetism: TBC

Living Things and their Habitats TBC

Key values

School Values: Happy, Healthy and Secure. Confident and Independent. Respectful and Caring. Inspired and Excited to Learn. Teamwork. British Values: The rule of law. Individual liberty. Mutual respect for and tolerance of those with different faiths and beliefs and for those without faith. Democracy. Christian Star Qualities: Love, Joy, Peace, Patience, Kindness,

Gentleness, Self-Control, Faithfulness, Goodness.

Book List & Resources

Forces: Magnetism: What is a magnet? - BBC Bitesize



Vocabulary **Properties and changes of materials**

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

Cultural Opportunities

Properties and changes of materials TBC

Key values

School Values: Happy, Healthy and Secure. Confident and Independent. Respectful and Caring. Inspired and Excited to Learn. Teamwork.

British Values: The rule of law. Individual liberty. Mutual respect for and tolerance of those with different faiths and beliefs and for those without faith. Democracy.

Christian Star Qualities: Love, Joy, Peace, Patience, Kindness, Gentleness, Self-Control, Faithfulness, Goodness.

Book List & Resources

Properties and changes of materials

Vocabulary Light

light, light source, dark, absence of light, transparent, translucent, opaque, shiny, matt, surface, shadow, reflect, mirror, sunlight, dangerous, white light, visible light, colour, spectrum, refraction light source, energy, reflector, reflect, predict, investigate, reflective materials Reflect, mirror, reflection, image, concave, convex, shadow Light source, opaque, translucent, transparent, shadow, measure

Cultural Opportunities

Light programme/light

Animals incl Humans: Stages of Growth твс

Key values

School Values: Happy, Healthy and Secure. Confident and Independent. Respectful and Caring. Inspired and Excited to Learn. Teamwork. British Values: The rule of law. Individual liberty. Mutual respect for and tolerance of those with different faiths and beliefs and for those without faith. Democracy. Christian Star Qualities: Love, Joy, Peace, Patience, Kindness, Gentleness, Self-Control, Faithfulness, Goodness.

Book List & Resour
<u>Light</u>
Developing Experts

Animals incl Humans: Stages of Growth

Puberty – the vocabulary to describe sexual characteristics

https://www.scienceandindustrymuseum.org.uk/learning/schools-

ces

s – Light (Year 3)

Which metals and materials are magnetic? - BBC Bitesize	https://explorify.uk/teaching-support/teaching-science/states-	Light - KS2 Science - BE
Forcestackle the tricky bits - Explorify	of-matter-tackle-the-tricky-bits	Explorify e.g. Light up
https://developingexperts.com/s/unit-library/units/496	Developing Experts – properties of materials (Year 5)	https://www.twinkl.co
https://explorify.uk/en/activities/have-you-ever/used-a-magnet	Properties and change of materials - KS2 Science - BBC Bitesize	light-unit-pack
https://explorify.uk/en/activities/what-if/you-had-magnets-for-		https://www.stem.org
<u>fingers</u>		3-light
https://explorify.uk/en/activities/whats-going-on/mighty-magnets		https://www.bbc.co.ul
https://www.twinkl.co.uk/resource/tp2-s-157-planit-science-year-3-		https://classroom.ther
forces-and-magnets-unit-pack		
https://www.stem.org.uk/resources/community/collection/12391/year-		Animals incl Humans:
3-forces-and-magnets		Developing Experts – S
https://www.bbc.co.uk/bitesize/articles/zg6q96f		
https://www.bbc.co.uk/bitesize/topics/zyttyrd		BBC bite sized - How d
https://www.bbc.co.uk/bitesize/topics/znmmn39		Bitesize
https://www.techagekids.com/2017/05/william-gilbert-facts-resources-		Explorify e.g. The aver
kids.html		https://explorify.uk/er
		change-as-they-becom
Living Things and their Habitats		
Living things and their habitats - KS2 Science - BBC Bitesize		
Living things and their habitatsexplore with your class - Explorify		
Developing Experts - Living things and their habitats (Year 5)		
https://explorify.uk/en/activities/odd-one-out/looking-after-baby		

Forces: MagnetismMaterialsI know everyday materials, including wood, plastic, glass, metal, water, and rock.I know the physical properties of a variety of everyday materials.I know the physical properties of a variety of everyday materials.I know that there are human-made and natural materials.Living Things and their Habitats that have never been aliveI know 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 otherI know and can name a variety of plants and animals in their habitats,			YEAR C	
Links to previous LearningLinks to previous LearningForces: MagnetismMaterialsI know everyday materials, including wood, plastic, glass, metal, water, and rock.I know the physical properties of a variety of everyday materials.I know the physical properties of a variety of everyday materials.I know the physical properties of a variety of everyday materials.I know the physical properties of a variety of everyday materials.I know the differences between things that are living, dead, and things that have never been aliveI know that different knost living things live in habitats to which they are suited and describe how different habitats potterI know that of a simple food chain, and identify and name different sources of foodKnowledgeKnowledgeKnowledgeForces: Magnetism: Big Question How does a magnet work? Are all materials magnetic2			Spring	
Forces: Magnetism MaterialsMaterialsI know everyday materials, including wood, plastic, glass, metal, water, and rock.I know the physical properties of a variety of everyday materials.I know the physical properties of a variety of everyday materials.I know the physical properties of a variety of everyday materials.I know the physical properties of a variety of everyday materials.I know the physical properties of a variety of everyday materials.I know the there are human-made and natural materials.I know the differences between things that are living, dead, and things that have never been aliveI know that most living things live in habitats to which they are suited and describe how different habitats, and how they depend on each otherI know wand can name a variety of plants and animals in their habitats, including micro-habitatsI can 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 foodKnowledgeForces: Magnetism: Big Question How does a magnet work?Know that materials nametric?				
MaterialsIdentify and compare the suitability of a variety of everyday materials, including wood, plastic, glass, metal, water, and rock.Talk about the differen (Nursery – Light) Describe they solution and deardboard for particular uses. (Y2 - Uses of everyday materials)Talk about the differen (Nursery – Light) Describe they solution and adversing and some magnetic materials.Talk about the differen (Nursery – Light) Describe they solution and deardboard for particular uses. (Y2 - Uses of everyday materials)Talk about the differen (Nursery – Light) Describe they solution and deardboard for particular uses. (Y2 - Uses of everyday materials)Talk about the differen (Nursery – Light) Describe they solution and advertiles some magnet work?Iknow the differences between things that are living, dead, and things that have never been alive Iknow that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different sources of foodTalk about the difference (Nursery – Light) Describe they solution and 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 foodTalk about the difference Montee that animals, including micro-habitats Iknow that some materials will dissolve in liquid to form a solution and describe how to recover a substance from a solution. Iknow that some materials have different uses depending on theirTalk about the difference (Nursery – Light) Describe they solution and describe how to recover a substance from a solution. Iknow that materials have different uses depending on theirKnowledge How does a magnet work? Are all materials have different uses depending on theirKnowl	L	inks to previous Learning	Links to previous Learning	Links to previous Lea
Forces: Magnetism: Big QuestionProperties and changes of materials I know that some materials will dissolve in liquid to form a solution and describe how to recover a substance from a solution. I know that materials have different uses depending on theirLight and Shadows: Big Question How does light trave	I a l l l l l l l l a d o l ir a	Aaterials know everyday materials, including wood, plastic, glass, metal, water, nd rock. know the physical properties of a variety of everyday materials. know that there are human-made and natural materials. iving Things and their Habitats know the differences between things that are living, dead, and things hat have never been alive know that most living things live in habitats to which they are suited nd describe how different habitats provide for the basic needs of iifferent kinds of animals and plants, and how they depend on each ther know and can name a variety of plants and animals in their habitats, ncluding micro-habitats can describe how animals obtain their food from plants and other nimals, using the idea of a simple food chain, and identify and name	Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. (Y2 - Uses of everyday materials) Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. (Y2 - Uses of everyday materials) Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify	Talk about the differe (Nursery – Light) Describe what they se Identify, name, draw a say which part of the including humans) Describe the simple p materials. (Y1 - Mater <u>Animals including Hu</u> I know that humans g
Big Question I know that some materials will dissolve in liquid to form a Big Question How does a magnet work? solution and describe how to recover a substance from a solution. How does light trave Are all materials magnetic? I know that materials have different uses depending on their How does light trave	К	nowledge	Knowledge	Knowledge
How does a magnet work?solution and describe how to recover a substance from a solution.How does light traveAre all materials magnetic?I know that materials have different uses depending on theirHow does light trave	F	orces: Magnetism:	Properties and changes of materials	Light and Shadows:
How does a magnet work?solution and describe how to recover a substance from a solution.How does light traveAre all materials magnetic?I know that materials have different uses depending on theirHow does light trave	В	ig Question	I know that some materials will dissolve in liquid to form a	Big Question
Are all materials magnetic?			solution and describe how to recover a substance from a solution.	•
		-	I know that materials have different uses depending on their	

5

BBC Bitesize up the dark - Explorify .co.uk/resource/tp2-s-122-planit-science-year-3-

org.uk/resources/community/collection/12719/year-

.uk/bitesize/topics/zbssgk7 nenational.academy/units/light-dark-250b

s: Stages of Growth - Stages of Growth Year 5 do humans change during their lifetime? - BBC

verage lifespan of a human was 200? - Explorify /en/activities/have-you-ever/noticed-how-babiesome-toddlers

Summer

earning

work. (Nursery – Light) erences in materials and changes they notice.

see, hear and feel whilst outside. (Reception–Light) w and label the basic parts of the human body and ne body is associated with each sense. (Y1 - Animals,

physical properties of a variety of everyday terials)

Humans: Stages of Growth s grow and change (e.g. babies, children, teenagers,

names for boys and girl's genitalia (PSHE) including humans, have offspring which grow into ls, including humans)

vel?

I know that a force is a push or a pull.

I know that when an object moves on a surface, the texture of the surface and the object affect how it moves. It may help the object to move better or it may hinder its movement e.g. ice skater compared to walking on ice in normal shoes.

I know a magnet attracts magnetic material. Iron and nickel and other materials containing these, e.g. stainless steel, are magnetic.

I know the strongest parts of a magnet are the poles.

I know that magnets have two poles- a north pole and a south pole.

I know that if two like poles, e.g. two north poles, are brought together they will push away from each other - repel. If two unlike poles, e.g. a north and south, are brought together they will pull together – attract. I know that some forces need contact between two objects, but magnetic forces can act at a distance.

I know what metal is found in a magnet

I know why a magnet always point north

Living Things and their Habitats

I know that environments can change and that this can sometimes pose dangers to living things.

I know that as part of their life cycle, plants and animals reproduce. I know that most animals reproduce sexually.

I know that this involves two parents where the sperm from the male fertilises the female egg.

I know that animals, including humans, have offspring which grow into adults.

I know that in humans and some animals, these offspring will be born live, such as babies or kittens, and then grow into adults.

I know that in other animals, such as chickens or snakes, there may be eggs laid that hatch to young which then grow to adults.

I know that some young undergo a further change before becoming adults e.g. caterpillars to butterflies.

I know that this is called a metamorphosis.

I know that plants reproduce both sexually and asexually.

I know that bulbs, tubers, runners and plantlets are examples of asexual plant reproduction which involves only one parent.

I know that gardeners may force plants to reproduce asexually by taking cuttings.

I know that sexual reproduction occurs through pollination, usually involving wind or insects.

Key Skills

Forces: Magnetism: **Big Question** How does a magnet work? Are all materials magnetic?

I know that properties include hardness, transparency, electrical and thermal conductivity and attraction to magnets.

I know that some materials will dissolve in a liquid and form a solution while others are insoluble and form sediment. I know that mixtures can be separated by filtering, sieving and evaporation.

I know that some changes to materials such as dissolving, mixing and changes of state are reversible, but some changes such as burning wood, rusting and mixing vinegar with bicarbonate of soda result in the formation of new materials and these are not reversible.

I know that we see objects because our eyes can sense light. I know that dark is the absence of light. I know that we cannot see anything in complete darkness. I know that some objects, for example, the sun, light bulbs and candles, are sources of light. I know that objects are easier to see if there is more light. I know that some surfaces reflect light. I know that objects are easier to see when there is less light if that are reflective.

I know that the light from the sun can damage our eyes and therefore we should not look directly at the sun and can protect our eyes by wearing sunglasses or sunhats in bright light. that I need light in order to see things, and that dark is the absence of light. I know that light is reflected from surfaces. I know that light from the sun can be dangerous and that there are ways to protect their eyes. I know that shadows are formed on a surface when an opaque or translucent object is between a light source and the surface and blocks some of the light. I know the size of the shadow depends on the position of the source, object and surface.

Animals incl Humans: Stages of Growth Big Question: How do humans change in their lifetime?

This needs to be taught alongside PSHE

Key Skills

Properties and changes of materials

Big Question: How can we clean our dirty water? How does the temperature of tea affect how long sugar takes to dissolve? (Updated March 2023)

Key Skills Light and Shadows:

Big Question How does light travel?

I know that when babies are young, they grow rapidly.

I know they are very dependent on their parents.

I know as they develop, they learn many skills. At puberty, a child's body changes and develops primary and secondary sexual characteristics. I know that this enables the adult to reproduce.

Working Scientifically

Engaging in practical enguiry to answer questions - Setting up simple practical enquiries, comparative and fair tests

Recording and presenting evidence, gathering and recording data to help in answering questions. Recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.

I can name a range of types of magnets and show how the poles attract and repel

I can draw diagrams using arrows to show the attraction and repulsion between the poles of magnets

I can carry out investigations to explore how objects move on different surfaces e.g. spinning tops/coins, rolling balls/cars, clockwork toys, soles of shoes etc.

I can explore what materials are attracted to a magnet.

I can classify materials according to whether they are magnetic.

I can explore the way that magnets behave in relation to each other.

I can use a marked magnet to find the unmarked poles on other types of magnets.

I can explore how magnets work at a distance e.g. through the table, in water, jumping paper clips up off the table.

I can devise an investigation to test the strength of magnets.

I can devise an experiment to test the strength of 5 magnets, label them a-e and then test how many identical paperclips (in a chain) are attracted.

I can show results in a pictogram/bar graph and write true or false

Scientists

William Gilbert

Doctor who developed the theory of magnetism

Eric Laithwaite

(Electrical Engineer who developed the technology behind the maglev train)

Living Things and their Habitats

I can use secondary sources and, where possible, first-hand observations to find out about the life cycle of a range of animals. I can compare the gestation times for mammals and look for patterns e.g. in relation to size of animal or length of dependency after birth. I can look for patterns between the size of an animal and its expected life span.

I can grow and observe plants that reproduce asexually e.g. strawberries, spider plants, potatoes.

I can take cuttings from a range of plants e.g. African violet, mint. I can plant bulbs and then harvest to see how they multiply. I can use secondary sources to find out about pollination.

Working Scientifically

Making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers

Setting up simple practical enquiries, comparative and fair tests

I can investigate the properties of different materials in order to recommend materials for particular functions depending on these properties e.g. test waterproofness and thermal insulation to identify a suitable fabric for a coat.

I can explore adding a range of solids to water and other liquids e.g. cooking oil, as appropriate.

I can investigate rates of dissolving by carrying out comparative and fair test.

I can separate mixtures by sieving, filtering and evaporation, choosing the most suitable method and equipment for each mixture.

I can explore a range of non-reversible changes e.g. rusting, adding fizzy tablets to water, burning.

I can carry out comparative and fair tests involving non-reversible changes e.g. What affects the rate of rusting? What affects the amount of gas produced?

I can research new materials produced by chemists e.g. Spencer Silver (glue of sticky notes) and Ruth Benerito (wrinkle free cotton).

Scientist

I can find out about how Ruth Benerito created 'wrinkle-free' cotton

https://www.sciencehistory.org/historical-profile/ruth-benerito



Scientist I can find out about Daniel Farenheit



Working Scientifically support their findings ideas and processes

I can describe how we see objects in light and can describe dark as the absence of light I can state that it is dangerous to view the sun directly and state precautions used to view the sun, for example in eclipses I can define transparent, translucent and opaque I can describe how shadows are formed

is able to do

puberty

Using straightforward scientific evidence to answer questions or to

Identifying differences, similarities or changes related to simple scientific

Using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions

Animals incl Humans: Stages of Growth

Big Question: How do humans change in their lifetime? I can explain how a baby changes physically as it grows, and also what it

I can explain the changes that takes place in boys and girls during

Scientists

I can research David Attenborough's contribution to our understanding of living things and their habitats.

Vocabulary

Forces: Magnetism:

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

Living Things and their Habitats

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

Cultural Opportunities

Forces: Magnetism: TBC

Living Things and their Habitats TBC

Key values

School Values: Happy, Healthy and Secure. Confident and Independent. Respectful and Caring. Inspired and Excited to Learn. Teamwork. British Values: The rule of law. Individual liberty. Mutual respect for and tolerance of those with different faiths and beliefs and for those without faith. Democracy.

Christian Star Qualities: Love, Joy, Peace, Patience, Kindness, Gentleness, Self-Control, Faithfulness, Goodness.

Book List & Resources

Forces: Magnetism:

What is a magnet? - BBC Bitesize

Which metals and materials are magnetic? - BBC Bitesize Forces...tackle the tricky bits - Explorify

https://developingexperts.com/s/unit-library/units/496

https://explorify.uk/en/activities/have-you-ever/used-a-magnet

https://explorify.uk/en/activities/what-if/you-had-magnets-forfingers

https://explorify.uk/en/activities/whats-going-on/mighty-magnets https://www.twinkl.co.uk/resource/tp2-s-157-planit-science-year-3forces-and-magnets-unit-pack

https://www.stem.org.uk/resources/community/collection/12391/year-3-forces-and-magnets

https://www.bbc.co.uk/bitesize/articles/zg6q96f

https://www.bbc.co.uk/bitesize/topics/zyttyrd

https://www.bbc.co.uk/bitesize/topics/znmmn39

https://www.techagekids.com/2017/05/william-gilbert-facts-resourceskids.html

Vocabulary

Properties and changes of materials

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

Cultural Opportunities

Properties and changes of materials TBC

Key values

School Values: Happy, Healthy and Secure. Confident and Independent. Respectful and Caring. Inspired and Excited to Learn. Teamwork.

British Values: The rule of law. Individual liberty. Mutual respect for and tolerance of those with different faiths and beliefs and for those without faith. Democracy.

Christian Star Qualities: Love, Joy, Peace, Patience, Kindness, Gentleness, Self-Control, Faithfulness, Goodness.

Book List & Resources

Properties and changes of materials

https://explorify.uk/teaching-support/teaching-science/statesof-matter-tackle-the-tricky-bits **Developing Experts – properties of materials (Year 5)** Properties and change of materials - KS2 Science - BBC Bitesize

Vocabulary Light

light, light source, dark, absence of light, transparent, translucent, opaque, shiny, matt, surface, shadow, reflect, mirror, sunlight, dangerous, white light, visible light, colour, spectrum, refraction light source, energy, reflector, reflect, predict, investigate, reflective materials Reflect, mirror, reflection, image, concave, convex, shadow Light source, opaque, translucent, transparent, shadow, measure

Cultural Opportunities <u>Light</u> programme/light

TBC Key values

School Values: Happy, Healthy and Secure. Confident and Independent. Respectful and Caring. Inspired and Excited to Learn. Teamwork. British Values: The rule of law. Individual liberty. Mutual respect for and tolerance of those with different faiths and beliefs and for those without faith. Democracy. Christian Star Qualities: Love, Joy, Peace, Patience, Kindness, Gentleness, Self-Control, Faithfulness, Goodness.

Book List & Resources Light

Developing Experts – Light (Year 3) Light - KS2 Science - BBC Bitesize **Explorify e.g.** Light up the dark - Explorify https://www.twinkl.co.uk/resource/tp2-s-122-planit-science-year-3light-unit-pack https://www.stem.org.uk/resources/community/collection/12719/year-3-light https://www.bbc.co.uk/bitesize/topics/zbssgk7 https://classroom.thenational.academy/units/light-dark-250b

Developing Experts – Stages of Growth Year 5 <u>BBC bite sized -</u> How do humans change during their lifetime? - BBC Bitesize **Explorify e.g.** The average lifespan of a human was 200? - Explorify https://explorify.uk/en/activities/have-you-ever/noticed-how-babieschange-as-they-become-toddlers

Living Things and their Habitats

Animals incl Humans: Stages of Growth Puberty - the vocabulary to describe sexual characteristics

https://www.scienceandindustrymuseum.org.uk/learning/schools-

Animals incl Humans: Stages of Growth

Animals incl Humans: Stages of Growth

	YEAR C	
Developing Experts - Living things and their habitats (Year 5) https://explorify.uk/en/activities/odd-one-out/looking-after-baby		
Living things and their habitatsexplore with your class - Explorify		
Living things and their habitats - KS2 Science - BBC Bitesize		