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CLEVES CROSS PRIMARY and NURSERY SCHOOL
SCIENCE CURRICULUM COHESION

	Autumn	Spring	Summer
Nursery	**Let's Celebrate:** **Harvest, Black History Month, Diwali, Halloween, Bonfire Night, Hanukkah, Christmas, Autumn** **<u>All about me!</u>**	**Let's Celebrate:** **New Year, Chinese New Year, Valentines and the people we love, World Book Day, Mother's Day, Easter, Winter, Spring,** **<u>Traditional Tales</u>**	**Let's Celebrate:** **Eid, Gypsy, Roma and Traveller History Month, Father's Day, Pride, Summer** **<u>Let's Grow</u>**
	Children will use their senses during hand-on exploration. They will explore and talk about different forces they can feel and talk about the changes they notice in relation to the seasons, weather and states.		
	During their work surrounding 'Harvest' children will explore and find seeds in Autumn vegetables and discuss why they are there and what we could do with them. They will learn that all living things need respect, including animals. They will look for signs of Autumn during our Autumn Walk.	They will look for signs of Winter during our Winter Walk. Focus on frost and ice and talk about the process of melting and freezing during temperature change. A local farm visit will build on children's previous knowledge on the need for care and respect for all living things, including animals. They will look for signs of spring towards the end of the Spring term during our Spring Walk.	Children will explore seeds and bulbs. They will plant many types of plants, including fruit and vegetables and observe them growing. They will learn how to care and respect plants. They will look for signs of Summer during our Summer Walk.
Reception	**<u>Marvellous Me</u>** **<u>Celebrations</u>** Children will be introduced to similarities and differences between themselves and others. They will begin to understand growth by reflecting on their own growth and developments so far.	**<u>The Big Freeze/Chinese New Year</u>** **<u>Superfood</u>** Children will continue comparing seasons as they explore, observe and experience Winter. They will develop an understanding of hibernation and understand that animals can live in cold places by exploring polar animals and	**<u>Me and My Universe-</u>** **<u>Out and About</u>** Children will continue to explore seasons as they explore, observe and experience Summer. They will continue to observe the growth of plants and to care for them.

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	They will begin to learn about their own bodies- naming simple external parts and exploring different skeletons. Children will be introduced to similarities and differences between seasons as they explore, observe and experience Autumn. They will collect, compare and contrast Autumn leaves. They will begin to investigate colour mixing of primary colour. RRS Article 8 Children have the right to an identity. Eco /LOTC Local area: **Local visit- Hardwick Park**	landscapes. They will explore and investigate melting and freezing water. Children will be introduced to similarities and differences between British garden birds during the Big Bird Watch. They will be encouraged to show care and concern for living things and the environment as they develop an understanding of plastic pollution (litter) and its effects on habitats such as Antarctica. Children will investigate with floating and sinking. Children will develop an understanding of basic health and hygiene and why it is important to wash hands. They will investigate germs-observing and comparing change. Children will continue to explore similarities and differences between seasons as they explore, observe and experience spring. Children will develop their understanding of growth by planting seeds and observing and comparing their growth. Children will develop an understanding of where food comes from	They will be introduced to space and our solar system. They will look closer at Earth and their position on it. They will explore light and dark. Children will be encouraged to show care and concern for living things and the environment as they develop an understanding of recycling. They explore and classifying simple materials. Children will continue to enjoy junk modelling, cooking activities and working with wood and clay. Children will continue to develop an understanding of health and hygiene. They will learn about oral hygiene and how the dentist and doctors help to keep us healthy in our local community.

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		They will develop a basic understanding of foods and resources we get from animals. Eco /LOTC **Visit to a local farm and observe farm animals**. Children will investigate with floating and sinking. Children will continue to develop an understanding of healthy lifestyles and begin to understand that some foods are healthy and unhealthy.	
Year One	**Biology Animals Inc. Humans – What are my body parts?** Following on from learning about how to be healthy in EYFS, and inspired by their All About me topic, children will learn more about their own bodies. identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. **Chemistry Everyday Materials –What material is it?** Building on from their learning about the materials in the environment around them in EYFS, in this unit, children will distinguish between an object and the material from which it is made and identify and name a variety of everyday materials including wood, plastic, glass, metal, water and rock.	**Biology Animals Inc. Humans- How can I describe an animal?** Building on from the previous unit in Year One, children will identify and name a variety of common animals that are carnivores, herbivores and omnivores. They will describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets.) **Sustainability** Children will be encouraged to consider ways of caring for the planet. Eco	**Biology Plants Around Us-** **What is the basic structure of a plant?** **Which plants and trees do I know?** Building on from their learning about the environment around them in EYFS, children will learn to describe the basic structure of a variety of common flowering plants, including trees. children will identify and name a variety of common wild and garden plants, including deciduous and evergreen trees in their local environment. Eco /LOTC- Use the school grounds/local area to identify trees.

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	They will also describe the simple physical properties of a variety of everyday materials. They will compare and group together a variety of everyday materials based on their simple physical properties		
Working Scientifically	*Ask simple questions.* *Verbally state what they are going to investigate.* *Observe closely* *Carry out simple tests using nonstandard measurements when appropriate.* *Gather and record simple data. • Sort objects and living things into groups based on simple properties.* *Explain what they found out to an adult or a partner.* *Answer simple questions.*		
Endpoints	**Biology** • Name and identify parts of the human body • Draw and label parts of the human body • Name and understand the features of the 5 senses **Chemistry** • Name, identify and compare the properties of materials: wood, plastic, glass, metal and rock • Understand the processes of melting and freezing • Understand the process of floating, sinking and absorbing **Seasonal Change** • Collect and record data about changes in Autumn	**Biology** • Name and identify characteristics of: Mammals, Birds, Fish, Amphibians, Reptiles. • Compare and group animals • Understand the characteristics of: Carnivores, Herbivores and Omnivores **Sustainability** Why and how can we care for our planet? **Seasonal Change** Collect and record data about changes in Spring	**Biology** • Know plant parts • Know the parts of a tree • Understand the difference between wild and garden plants • Recognise plants in local area • Recognise and name deciduous trees • Recognise evergreen trees • Identify trees in local area • Observe plants over time **Sustainability** • Know where my food comes from. • Answer the question- what have I planted and grown this year?

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	• Collect and record data about changes in Winter	**Biology – Planting A and B** Planting and observing changes	**Seasonal Change** • Recognise changes in Summer • Collect and record data • What are the main changes in each season?
Year 2	**Biology Animals Inc. Humans- What does an animal need to survive?** Children will build on previous knowledge about animals and will find out about, and describe, the basic needs of animals, including humans, for survival (water, food and air). They will describe the importance for humans of exercise, eating the right amounts of different types of food and hygiene. **RRS** Article 24- children have the right to good quality healthcare. Eco- environmental awareness **Chemistry Everyday Materials –Can a material's shape always be changed?** Building on previous understanding, children will identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass. brick, rock, paper and cardboard for particular uses. They will find out how the shapes of solid objects made from materials can be changed by squashing, bending, twisting & stretching.	**Biology Plants – What do they need to grow?** Building on from learning about common plants and trees, children will observe and describe how seeds and bulbs grow into mature plants. They will find out and describe how plants need water, light and a suitable temperature to grow and stay healthy. **Sustainability Plastic**- how is plastic helpful? How can we reduce plastic in school? **Living things and their habitats–Why do they live there?** Building on their understanding of alive/not alive, children will 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.	**Biology Plants – What do they need to grow?** They will find out and describe how plants need water, light and a suitable temperature to grow and stay healthy. **ECO** **Biology Animals Inc. Humans- Animals and their babies** Children will learn that animals, including humans, have offspring which grow into adults. **Sustainability** Wildlife – what does wildlife do for us and what do we do for wildlife? **ECO RRS**

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	Sustainability Plastic- how is plastic helpful? How can we reduce plastic in school? **ECO RRS**	They will identify and name a variety of plants and animals in their habitats, including micro-habitats Finally, they will 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.	
Working Scientifically	*Ask simple questions and recognise that they can be answered in different ways* *Make simple predictions based on a question.* *Identify what they will change and keep the same.* *Observe closely, using simple equipment.* *Perform simple tests using standard units when appropriate.* *Gather and record data to help in answering questions.* *Identifying and classifying.* *Talk about what they have found out and how they found it out. (non-statutory)* *Use their observations and ideas to suggest answers to questions.*		
Endpoints	**Biology** • Know what birds need to survive. • Know what fish need to survive. • Know what amphibians need to survive. • Know what reptiles need to survive. • Know what humans need to survive. Biology • Know what humans need to do to stay healthy.	**Biology – plants** • Explore and name plant parts • Understand what plants need to grow • Plan and investigate what happens to plants in light and dark • Understand and conclude the findings from light and dark experiment **Biology – living things** • Explore habitats in local area	**Biology** • Understand the difference between bulbs and seeds • Explain what plants need to grow • Plan and investigate bulbs and seeds **Biology** • Understand the concept of mother and offspring • Explain the life cycle of humans • Know life cycles of different mammals

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	• Understand the importance of exercise in a healthy lifestyle • Know humans need a healthy balanced diet • Understand what personal hygiene is • Know how important dental hygiene is Chemistry • Explore properties of wood, paper and cardboard, brick, rock, glass, plastic, metal and fabrics • Investigate same object, different materials • Test materials – bend, squash, twist and stretch • Plan and investigate – waterproofing Sustainability – Plastic • Know how plastic is helpful • Explain how we can reduce our plastic waste in school	• Name characteristics and compare the following habitats: Polar, Desert, Woodland, microhabitats and Ocean • Explore habitats and diet • Explore food chains • Understand the difference between living, dead or never alive	• Know life cycles of amphibians • Know life cycle of a butterfly • Answer – are there any patterns between life cycles of different animals? **Biology** • Findings - bulbs and seeds **Biology** • Create a butterfly diary **Sustainability** • Explain- what does wildlife do for us? • Explain- What can we do for wildlife?
Year 3	**Biology** **Animals Inc. Humans- How do we move** Building on their previous learning and understanding of animals, children will identify that humans and some other animals have skeletons and muscles for support, protection and movement.	**Chemistry** **Materials Why is soil important?** Children will build on earlier learning about rocks and will recognise that soils are made from rocks and organic matter and find out how important soil is. **How are fossils formed?** They will describe in simple terms how fossils are	**Biology** **Plants – What are their parts and functions** They will 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 Children will investigate the way in which water is

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	Alongside this, they will identify that animals and humans need the right types / amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat. RRS Article 24 Children have the right to good healthcare and healthy food/clean water. **Chemistry.** **What Rocks is it?** Moving on from their knowledge of materials, children will begin to learn about the comparisons between materials, and how to group together different kinds of rocks based on their appearance and simple physical properties.	formed when things that have lived are trapped within rock. **Physics** **Light - How does light help us see?** Children will recognise that they need light in order to see things and that dark is the absence of light. They will learn that light is reflected from surfaces. They will recognise that light from the sun can be dangerous and that there are ways to protect their eyes. And that shadows are formed when the light from a light source is blocked by an opaque object. Children will find patterns in the way that the size of shadows changes.	transported within plants and explore the part that flowers play in the life cycle of flowering plants, Inc. pollination, seed formation and seed dispersal. **Physics** **Forces and magnets -how do magnets work?** Building onto their knowledge of materials, children will compare how things move on different surfaces. They will notice that some forces need contact between 2 objects, but magnetic forces can act at a distance. They will observe how magnets attract or repel each other and attract some materials and not others. They will compare and group together a variety of everyday materials based on whether they are attracted to a magnet and identify some magnetic materials. Using their knowledge of forces, they will describe magnets as having 2 poles and predict whether 2 magnets will attract or repel each other, depending on which poles are facing. **Sustainability -Biodiversity Eco** What is biodiversity and how can we increase biodiversity in our area.
Emdpoints	**Biology**	**Chemistry**	

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	• Name and identify bones in the human body (skull, spine, ribcage, pelvis and femur) • Name the functions of the skeleton. • Name and identify bones in a range of animals • Know some animals have a spine and some don't • Answer -are skeletons the same? (Endo/Exo- skeletons) • Know that movement is assisted by joints. • Know how we move. **Biology – food groups** • Know there are food groups • Understand the 5 food groups • Recognise a balanced diet • Compare diets • Understand animal diets **Sustainability** • Explain -What is food waste? • Answer - How can we reduce food waste? **Chemistry** • Identify and group rocks • Test rocks • Complete a local rock survey	• Explore fossils • Understand how fossils are formed. • Explore and understand the importance of soil • Plan, investigate and evaluate an experiment with soil **Physics** • Understand light sources • Know the sun is a light source • Know how we see • Understand how shadows are formed • Understand opaque, translucent or transparent • Plan, investigate and evaluate – shadow experiment	
Year Four	**Biology**	**Physics**	**Biology**

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	Living things and their habitats- What group do I belong to? Building on previous key stage one learning of alive/not alive and habitats, children will recognise that living things can be grouped in a variety of ways. They will explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. Children will recognise that environments can change and that this can sometimes pose dangers to living things. Eco- pollution **Chemistry** **Materials- Solid, Liquid or Gas?** Building on their knowledge of materials and their properties, children in this unit will, compare and group materials together, according to whether they are solids, liquids or gases. They will 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). Also, they will identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.	**Sound- How do I hear that noise?** Children will identify how sounds are made, associating some of them with something vibrating- recognising that vibrations from sounds travel through a medium to the ear. They will find patterns between pitch and features of the object that produced it and find patterns between volume of a sound and the strength of the vibrations that produced it. They will recognise that sounds get fainter as the distance from the sound source increases. **Physics** **Electricity- How do my lights work?** Children will identify common appliances that run on electricity. They will construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers. They will identify whether a lamp will light in a simple series circuit, based on whether the lamp is part of a complete loop with a battery. Children will recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit. They will	**Animals Inc. Humans-What is the digestive system?** Building on their previous learning animals and skeletons and muscles, children will describe the simple functions of the basic parts of the digestive system in humans They will identify the different types of teeth in humans and their simple functions. Additionally, they will construct and interpret a variety of food chains, identifying producers, predators and prey. RRS- Article 24. Children have the right to a healthy lifestyle. **BIOLOGY** **Habitats** **Can I develop my classification skills?** **Food Chains** **What is a food chain and how do I interpret them?**

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		recognise some common conductors and insulators, and associate metals with being good conductors.	
Endpoints	**PHYSICS Biology** • Know and group animals • Identify vertebrate and invertebrate • Sort and classify information from a classification key (animals) • Group plants • Sort and classify information from a classification key (plants) • Collect and analyse data **Chemistry** • Explore solids, liquids and gases • Change states – solids, liquids and gases • Use equipment safely in investigations • Plan/investigate/evaluate- melting experiment • Understand the water cycle • Plan/investigate/evaluate evaporation experiment	**Physics** • Understand vibrations • Know the ear and how it works • Investigate sounds • Explore volume and pitch • Plan/investigate/evaluate- volume experiment • Collect and analyse data **Physics** • Know common appliances which use electricity • Build and draw series circuits • Identify what has gone wrong in a circuit • Recognise and explain conductors and insulators • Explain how conductivity affects a circuit **Sustainability** Answer- what is energy? Explain - How can we reduce energy waste?	**Biology** • Collect, analyse and make conclusions about data **Sustainability** (cross curricular linked) • Answer -what is deforestation? • Answer- what is the impact of deforestation in the UK and the rest of the World **Biology** • Create classification keys (animals) • Create classification keys (plants) • Answer the question what impact do humans have on animals? **Biology** • Know that carnivore, herbivore and omnivore have different teeth • Name the human teeth and their function • Know the structure of a human tooth.

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			• Plan, conduct and evaluate a tooth decay experiment • Know the digestive system and the function of each part • Record the conclusion of the tooth decay experiment.
Year Five	**Forces- What is making this move or slow down?** Building on previous learning about forces and magnets in Year 3, children will explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. They will identify the effects of air resistance, water resistance and friction, that act between moving surfaces. They will recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect. **PHYSICS** **Earth and Space – What can I find out about Space?** Children will describe the movement of the Earth, and other planets relative to the sun (heli/ogeocentric) in the solar system. They will describe the movement of the moon relative to the Earth. Children will describe the Sun, Earth and Moon as approximately spherical bodies and use the idea of the	**CHEMISTRY** **Materials- What are the properties of materials and how can it change?** Building on previous knowledge of materials (KS1) and their simple properties and states of matter (KS2), children will 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. They will come to know that some materials will dissolve in liquid to form a solution and describe how to recover a substance from a solution. Children will use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating. They will give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic. Children will demonstrate that dissolving, mixing and	**BIOLOGY** **Reproduction** Building on previous knowledge of life cycles, children are introduced to sexual reproduction. Children will understand that fertilisation is the process by which a male sperm cell and female egg cell join to form a new life. They will also understand that sexual reproduction results in offspring that are not identical to the parents. **CHEMiSTRY** **Reversible and irreversible change** Building on previous knowledge, children will learn about the process of dissolving and explore the difference between soluble and insoluble substances. Children will know that a soluble substance can dissolve in a liquid to make a solution and that insoluble substances cannot dissolve in a liquid. Children are made aware that increasing the temperature of a liquid and stirring it will increase the rate at which soluble substances dissolve in it.

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	Earth's rotation to explain day and night and the apparent movement of the sun across the sky. Educate & Celebrate Gender **Sustainability** Children explore the impacts of global warming on living things. This step gives children the opportunity to work scientifically and practically and to think of ways to reduce their own/and school's carbon footprint.	changes of state are reversible changes and 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. **BIOLOGY Animals Inc. Humans- Why and How do humans change and reproduce?** Building on previous knowledge of animals and after learning about life cycles in Living Things Inc. humans, children will describe the changes as humans develop to old age. Educate & Celebrate Age, disability, gender, race **BIOLOGY Living things and their habitats- Are all life cycles the same?** Based on previous knowledge of living things and the habitats, children will describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. They will describe the life process of reproduction (using appropriate vocabulary) in some plants and animals.	Children will work scientifically by identifying whether a substance is soluble or insoluble and predict how other soluble substances behave. **Sustainability** Building on previous knowledge, children explore the impact of plastic pollution. Children should understand that the properties of plastic make it a useful material. However, plastic can take hundreds of years to break down which can be harmful to the environment, animals and humans
Endpoints	**Sustainability**	**BIOLOGY**	**BIOLOGY**

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	• Answer the question – what is global warming? • Answer- What are the impacts of global warming on living things?	**Understand life cycles** • Explain life cycles of different mammals • Explain life cycles of amphibians (frogs) • Explain life cycles of insects • Explain life cycles of birds	**Reproduction** • Understand sexual reproduction in mammals • Know the reproductive parts of a plant • Explain pollination • Explain asexual reproductions • Plan and conduct a cloning plant **CHEMISTRY** • Explain dissolving • Separate - materials - filtering and sieving • Explore solutions and evaporating • Understand reversible/irreversible changes • Explain irreversible change – burning • Explain irreversible change= acid
Year Six	**BIOLOGY** **Living things and their habitats-How can I classify living things scientifically?** Based on all previous learning about living things and their habitats, children will describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals. They will give reasons for	**PHYSICS** **Light and Dark- How does light travel?** Based on all previous learning, children will recognise that light appears to travel in straight lines. They will 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. Children will explain that we see things because light travels from light sources to our eyes or from light sources	**BIOLOGY** **Evolution and Inheritance- Why do plants and animals look and behave like they do?** Children recognise that living things have changed over time and that fossils provide Find out information about living things that inhabited the Earth millions of years ago They will recognise that living things produce offspring of the same kind, but

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	classifying plants and animals based on specific characteristics. Educate & Celebrate- Gender **PHYSICS** **Electricity- what makes a bulb shine brighter?** Based on previous learning about electricity and circuits, children will associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit. They will 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. Children will use recognised symbols when representing a simple circuit in a diagram	to objects and then to our eyes. Using the idea that light travels in straight lines, they will explain why shadows have the same shape as the objects that cast them. **Sustainability** Understand what light pollution is and discuss how light pollution can be reduced. **BIOLOGY Animals Inc. Humans-What makes a healthy heart and why is it important?** Based on all previous learning about the internal functions of the human body, children will identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood . They will also describe the ways in which nutrients and water are transported with animals, inc. humans. Children will recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function. **BIOLOGY** **Drugs, diet and lifestyle** Based on all previous learning about healthy lifestyles, children explore the impacts of diet, drugs and lifestyle on	normally offspring vary and are not identical to their parents. Children will identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution. RRS – Article 8 Children have the right to understand their identity. Educate & Celebrate- 9 protected characteristics THEMED PROJECT (Year 7 ready) tba

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		overall body health. They will make links to learning in the previous circulatory system work to identify how diet can have positive or negative effects on the heart. RRS – Article 24 Children have the right to a healthy lifestyle	
Endpoints	**BIOLOGY** • Know the conditions for life • Group organisms according to criteria • Classify animals and plants • Explain micro-organisms • Explain who Carl Linnaeus was and what he did **PHYSICS** • Construct and draw series circuits using symbols • Recognise complete and incomplete series • Explore variations within a circuit • Plan, conduct and evaluate an experiment based on voltage	**PHYSICS** • Explain how we see • Explore light and straight lines • Explain how shadow formation • Plan, conduct and evaluate an experiment -shadows • Understand refraction • Explore light **Sustainability** • Answer the question – what is light pollution? • Answer the question- how can I reduce light pollution **BIOLOGY** • Understand the circulatory system • Know what blood is made of and its function • Understand the structure of the heart	**CHEMiSTRY** • Explain fossil formation • Explore fossils • Explain who Mary Anning was and what did she do.

		• Explain the blood flow in the heart • Explain oxygenated and deoxygenated blood • Dissect a heart **BIOLOGY** • Explain what is a healthy diet • Understand what drugs are and the affect the have on the body • Understand the negative impact of cigarettes on the body • Plan, conduct and evaluate a heart rate experiment	