| | | Foston CE, | Terrington CE VA & Stillington Pr 'Love, Learn & Grow | | |
|--|------------------------------|--|--|--|---|
| Subjec | t: Physics | | Subject Intent: | | |
| | | | | ols, we intend that all our children will deve the wonder which comes with gaining a y can and can't see. | , |
| | | | and skills that it brings, Confidence and competition Excellent scientific known explanations; Scientific enquiry skills build upon prior known The ability to undertake | ependently and raise questions about wor tence in the full range of practical skills; wledge and understanding which is demor to be embedded in each topic throughout | nstrated in written and verbal the school to allow the children to |
| Key Concept | Overview | EYFS | Key Stage 1 | Key St | age 2- Cycle |
| cuits s. | Торіс | Understand electrical circuits Please note that this could be brought in with Keeping myself safe PSED | | El | ectricity |
| Understand electrical circuits concept involves understanding circuits nd their role in electrical applications. | NC objectives/ Milestones | Three and Four- Year-Olds Communication and Language • Understand 'why' questions, like: "Why do you think the caterpillar got so fat?" | | LKS2 Identify common appliances that run on electricity. | UKS2 Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit. |

| | | Communication and Language | the lamp is part of a complete loop with a | |
|---|-----------|---|---|---|
| | | •Learn new vocabulary. | battery. | |
| | | •Ask questions to find out more and to check | | |
| | | what has been said to them. | | |
| | | | Recognise that a switch opens and closes a | |
| | | •Articulate their ideas and thoughts in well- | circuit and associate this with whether or not a | |
| | | formed sentences. | lamp lights in a simple series circuit. | |
| | | Use talk to help work out problems and | | |
| | | organise thinking and activities, and to explain | | |
| | | how things work and why they might happen. | Recognise some common conductors | |
| | | Use new vocabulary in different contexts. | and insulators, and associate metals with being | |
| | | | good conductors. | |
| | | ELG | | |
| | | Communication and Language | | |
| | | Listening, | | |
| | | Attention and | | |
| | | | | |
| | | Understanding | | |
| | | Make comments about what they have | | |
| | | heard and ask questions to clarify their | | |
| | | understanding. | | |
| | Knowledge | Three and Four- | To identify the common appliances that run on | To associate the brightness of a lamp or the |
| | | Year-Olds | electricity (this could be in school or at home) | volume of a buzzer with the number and voltage |
| | | Communication and Language | | of cells used in the circuit. |
| | | • To understand 'why' questions, like: "Why | | |
| | | do you think the caterpillar got so fat?" | Specific example/s to be taught: | |
| | | `` | Identifying, from the following list, which are | Specific example/s to be taught: |
| | | Understanding the World | appliances which run off electricity: Motorbike, | More batteries or a higher voltage create more |
| | | •To explore collections of materials with | vacuum cleaner, clothes iron, washing machine, | power to flow through the circuit. |
| | | | wind-up alarm clock, pizza oven, dishwasher, | Fewer batteries or a lower voltage give less |
| | | similar and/or different properties. | washing machine, steam engine, mobile phone, | power to the circuit. |
| | | •To talk about what they see, using a wide | TV. | |
| | | vocabulary. | | |
| | | To explore how things work. | - | - |
| | | | | |
| | | Reception | | To compare and give reasons for variations in |
| | | Communication and Language | To construct a simple series electrical | how components function, including the |
| | | To learn new vocabulary. | circuit, identifying and naming its basic parts, | brightness of bulbs, the loudness of buzzers and |
| | | To ask questions to find out more and to | including cells, wires, bulbs, switches and | the on/off position of switches. |
| | | check what has been said to them. | buzzers. | |
| | | •To articulate their ideas and thoughts in well- | | |
| | | formed sentences. | Spacific axample/s to be taught | Specific example/s to be taught: |
| | | •To use talk to help work out problems and | Specific example/s to be taught: | Shortening the wires means the electrons have |
| | | organise thinking and activities, and to explain | Cells, wires, bulbs, switches, buzzers. | less resistance to flow through. |
| | | | | More buzzers or bulbs mean the power is shared |
| | | how things work and why they might happen. | - | by more components. |
| | | Use new vocabulary in different contexts. | | Lengthening the wires means the electrons have |
| | | | | to travel through more resistance. |
| | | ELG | To identify whether or not a lamp will light in a | |
| | | Communication and Language | simple series circuit, based on whether or not | That the on/off position of switches determines |
| | | Listening, | | whether the light is on / buzzer makes a noise as |
| | | Attention and | | it completes and breaks a circuit. |
| | | Understanding | | |
| I | | | | |

| • To make comments about what they have |
|--|
| heard and ask questions to clarify their |
| understanding. |

'For under-fives, most serious accidents happen in the home, but as your child grows, the serious risks reduce,'

'They are more able to help with day-to-day jobs and can learn to take more responsibility for themselves, but there are safe behaviours that they need to learn alongside their growing independence.'

Water and electricity don't mix: never to take electrical appliances into the bathroom. If you're helping in the kitchen, carry scissors and knives pointing downwards, use oven gloves and don't leave anything cooking unattended.

Never put small items in your mouth, especially button batteries and magnets: they can be really dangerous if you swallow them accidentally.

Never put any electric cables in your mouth.

the lamp is part of a complete loop with a battery.

Specific example/s to be taught:

1 bulb, 1 cell, 2 wires 1 bulb, 2 cells, 3 wires 2 bulbs, 2 cells, 4 wires 1 bulb, 2 cells, 3 wires 2 bulbs, 1 cell, 3 wires.

To recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit.

To use recognised symbols when representing a

simple circuit in a diagram.

Specific example/s to be taught:

| Electrical | Circuit Symbol | 5 |
|-------------------------------|----------------|-------------|
| - O (indicator) (iighting) | wire | -A |
| -MV | buzzer | open switch |
| I. | ⊢ | o-o- |

Specific example/s to be taught:

A lamp will light when the switch closes the circuit, but it will not light when a switch breaks a circuit.

To recognise some common conductors and insulators, and associate metals with being good conductors.

Specific example/s to be taught:

Common conductors: iron, silver, gold, seawater, copper, steel. Common insulators: wood, plastic, rubber, glass, paper.

-

To work safely with circuit components in the classroom.

Specific example/s to be taught:

That the outer casing of any electrical equipment isn't damaged; That there are no signs of rust on any pieces of equipment; That there are no signs of batteries leaking; That wires do not trail where they could cause a trip hazard;

| | | That no water bottles are near the equipment when it is being used; That children ensure their hands are completely clean and dry before using the equipment. That the materials can be tested in a circuit to see if they are electrical conductors or electrical insulators. Specific example/s to be taught: Common conductors: iron, silver, gold, seawater, copper, steel. Common insulators: wood, plastic, rubber, glass, paper. | |
|------------|---|--|--|
| Vocabulary | Electricity Danger Plug Electric appliances Rules Safety | Battery - a container consisting of one or more cells that is used for generating current. Bulb - a glass bulb which provides light by passing an electrical current through a filament. Buzzer - an electrical device that makes a buzzing noise and is used for signalling (for example, in a burglar alarm). Circuit - a complete and closed path around which a circulating current can flow. Conductor - a material or device which allows heat or electricity to carry through. Current –a flow of electricity which results from the ordered directional movement of electrically charged particles. Electricity - a form of energy resulting from the existence of charged particles. Filament – a conducting wire or thread with a high melting point which forms part of an electric bulb. Motor - a machine powered by electricity that supplies motive power for a vehicle or other moveable device. | Circuit - a closed loop for electricity to travel around component a part used in an electrical circuit. Electricity - a form of energy caused by electrons moving. Cell - (battery) a stored source of electricity Switch - a switch turns an electrical circuit on or off by completing or breaking the circuit. Conductor - an object that allows electricity to flow through it easily (objects made of metal are good conductors). Insulator - an object that does not allow electricity to flow through it easily. Circuit symbols see diagram Electrical Circuit Symbols Voltage - a force that makes electricity flow through a wire (measured in volts). |

| | | | | Static Electricity - a stationary electric charge, typically produced by friction, which causes sparks or crackling or the attraction of dust. Switch - a device for making and breaking the connection in a circuit. Voltage - the force that makes electricity move through a wire. | Motor - a machine that turns electrical energy into movement. Symbol - a visual picture that stands for something else. Current - the flow of electrons, measured in amps. Amps - how electric current is measured. Voltage - the force that makes the electric current move through the wires. The greater the voltage, the more current will flow. Resistance - the difficulty that the electric current has when flowing around a circuit. Electrons - very small particles that travel around an electrical circuit. |
|---|----------------|--|-------------|---|--|
| Key Concept | Overview | EYFS | Key Stage 1 | Key Stage 2 | 2- Cycle B/ D |
| Science Understan ding movement, | Торіс | Understanding movement, forces and magnets Under the sea - summer term 2 Year A People who have helped us - summer - 1 year A and year B | | Understanding movement, forces and magnets | Understanding movement, forces and magnets |
| forces and | Objectives NC/ | 3-4 yrs: | | LKS2 | UKS2 |
| magnets This concept involves understand ing what causes motion. | Milestones | -Explore collections of materials with similar and/or different properties. -Explore and talk about different forces they can feel. Reception -Use talk to explain how things work and why they might happen. | | 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. | MagnetsDescribe magnets as having two poles.Predict whether two magnets will attract or repel each other, depending on which poles are facing.ForcesExplain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.Identify the effect of drag forces, such as air resistance, water resistance and friction that act between moving surfaces.Describe, in terms of drag forces, why moving objects that are not driven tend to slow down. |

| | | | Understand that force and motion can be transferred through mechanical devices such as gears, pulleys, levers and springs. Understand that some mechanisms including levers, pulleys and gears, allow a smaller force to have a greater effect. |
|-----------|---|---|---|
| Knowledge | Children to start to understand the different vocabulary To explore different forces and how they affect movement. | To compare how things move on different surfaces. Specific example/s to be taught: Compare a variety of objects as they move across a smooth surface (eg how they move across or down a plastic whiteboard) compared to how the same objects moves across or down a more rough or bumpy surface. To notice that some forces need contact between 2 objects, however magnetic forces can act at a distance. Specific example/s to be taught: Forces which need contact to act: Friction – rubbing hands together, rubber brakes on a bike, writing on paper or a whiteboard. Tension – a cable car, climbing a rope, plucking a guitar string. The force of magnets acting on objects made of some metals (iron, nickel, cobalt, steel, as it contains iron). | Magnets That magnets have two poles. Predict whether two magnets will attract or repel each other, depending on which poles are facing. Specific example/s to be taught: That magnets have opposite North and South poles. A North and North pole together will repel each other, but a North and South pole will attract each other. Objects made of, or containing, iron, nickel and cobalt will be magnetic. Children will be able to explain, in detail and using the correct scientific terminology, why some objects are magnetic and some are not. They will be able to tailor their explanations according to their audience and purpose for speaking Forces Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. Specific example/s to be taught: A football, The moon |

| · · · · · · · · · · · · · · · · · · · | 1 | | | |
|---------------------------------------|---|--|---|---|
| | | | Specific example/s to be taught: | |
| | | | That magnets have opposite North and South | |
| | | | poles. A North and North pole together will | |
| | | | repel each other, but a North and South pole will | Identify the effect of drag forces, such as air |
| | | | attract each other. | resistance, water resistance and friction that act |
| | | | Objects made of, or containing, iron, nickel and | between moving surfaces. |
| | | | cobalt will be magnetic. | |
| | | | | Specific example/s to be taught: |
| | | | - | Air: |
| | | | Compare and group together a variety of | Parachutes through the air |
| | | | everyday materials on the basis of whether they | |
| | | | are attracted to a magnet, and identify some | Water: |
| | | | magnetic materials. | Swimmer diving into water |
| | | | | People walking through water |
| | | | Specific example/s to be taught: | Fish swimming through water |
| | | | Magnetic: iron, nickel, cobalt, and objects made | |
| | | | of these materials. | Friction: |
| | | | Non-magnetic materials – rubber, plastic, paper, | Shoes on carpet tiles / wooden boards / sheet |
| | | | glass, wood. | of paper / plastic sheet (bin liner). |
| | | | giuss, woou. | or paper / plastic sheet (birt life). |
| | | | | |
| | | | - | - |
| | | | | Describe in terms of dreat former when the |
| | | | To describe magnets as having 2 poles. | Describe, in terms of drag forces, why moving |
| | | | To describe magnets as naving 2 poles. | objects that are not driven tend to slow down. |
| | | | | |
| | | | | Specific example/s to be taught: |
| | | | | |
| | | | Specific example/s to be taught: | |
| | | | That magnets have opposite North and South | Understand that force and motion can be |
| | | | S | transferred through mechanical devices such as |
| | | | poles. A North and North pole together will | gears, pulleys, levers and springs. |
| | | | repel each other, but a North and South pole will | |
| | | | attract each other. | Specific example/s to be taught: |
| | | | | Pulleys allow us to lift weights and to change the |
| | | | - | direction of a force. |
| | | | | Gears let us control how quickly and in what |
| | | | To prodict whether 2 merces is "listened | direction something rotates. |
| | | | To predict whether 2 magnets will attract or | Levers increase the force, to help lift heavy |
| | | | repel each other, depending on which poles are | items. |
| | | | facing. | When a spring is pushed down, it exerts a push |
| | | | | force to go back to its original position. |
| | | | | |
| | | | | <u> </u> |
| | | | | |
| | | | Specific example/s to be taught: | |
| | | | A North and North pole together will repel each | Understand that some mechanisms including |
| | | | other, but a North and South pole will attract | levers, pulleys and gears, allow a smaller force to |
| | | | | |
| | | | each other. | |
| | | | each other. | have a greater effect. |

| | | | Specific example/s to be taught: Pulleys allow us to lift weights and to change the direction of a force by increasing the force used, Gears increase force and let us control how quickly and in what direction something rotates. Levers increase the force, to help lift heavy items. When a spring is pushed down, it exerts a push force to go back to its original position. |
|------------|---|---|---|
| Vocabulary | Push Pull Float Sink Stretch Slide Bounce magnetic | Friction- a force between 2 surfaces that are sliding or trying to slide across each other. Air resistance-a type of friction between air and another moving object. Water resistance- a type of friction between water and another moving object. Force meter- a tool for measuring force. Magnet-a material or object that produces a magnetic field. | Forces – a push or pull force. Gravity - a pulling force exerted by the Earth (or anything else which has mass). Earth's gravitational pull The pull that earth exerts on an object, pulling it towards Earth's centre. It is the Earth's gravitational pull which keeps us on the ground. Weight - the measure of the force of gravity on an object. Mass - a measure of how much matter (or 'stuff') is inside an object. friction - a force that acts between two surfaces or objects that are moving, or trying to move, across each other. Air resistance - a type of friction caused by air pushing against any moving object. Buoyancy - an object is buoyant if it floats. This is because the weight of the object is equal to the up thrust. Streamlined - when an object is shaped to minimise the effects of air or water resistance. Mechanism - mechanisms are simple machines with moving parts that change input forces. Examples of mechanisms are pulleys, gears and levers. |

| | | Up thrust A force that pushes objects up, usually |
|--|--|---|
| | | in water |

| Key Concept | Overview | EYFS | Key Stage 1 | Кеу | Stage 2 |
|-------------|------------------------------|--|-------------|---|--|
| Investigate | Торіс | Celebrations (Diwali) Autumn Term 2 Year A | | LKS2 | UKS2 |
| | NC objectives/ Milestones | -Talk about what they seeDescribe what they see whilst outside. -To understand some important processes such | | Recognise that they need light in order to see things and that dark is the absence of light. | Recognise that light appears to travel in straight lines. |
| | | as light and dark. -Making observations. | | Notice that light is reflected from surfaces. | Use the idea that light travels in straight lines to explain that objects are seen because they give out |
| | | | | Recognise that light from the sun can be dangerous and that there are ways to protect | or reflect light into the eye. |
| | | | | their eyes. | Explain that we see things because light travels from light sources to our eyes or from light sources |
| | | | | Recognise that shadows are formed when the light from a light source is blocked by an opaque | to objects and then to our eyes. |
| | | | | object. | Use the idea that light travels in straight lines to explain why shadows have the same shape as the |
| | | | | Find patterns in the way that the size of shadows change. | objects that cast them. |
| | Knowledge | -I need light to see. -Light comes from different sources. -A candle is a light sourceThe sun is a light | | | |
| | | source. -It is dark at night, and light in the day. | | | |
| | Vocabulary | See Light | | Light source - a source of light makes light. | Reflection- occurs when a light ray hits a surface and bounces off. |
| | | Dark | | Senses - our five senses allow us to observe and | |
| | | Eye Fire | | understand the world around us. | Shadow- the dark shape made when something blocks light. |
| | | Sun | | Pupil- the opening in the centre of the eye. | Turner and light consolately access through it |
| | | Moon Stars reflection | | Reflect-when light bounces off a surface. | Transparent -light completely passes through it, and you can see clearly through it. |
| | | | | Axis- an imaginary line that an object rotates around. | Translucent -some light passes through it, but the light is scattered, so you can't see clearly through it. |
| | | | | Shadow- the dark shape made when something blocks light. | Opaque -cannot be seen through and does not allow light to pass through it. |
| | | | | Transparent- light completely passes through it, and you can see clearly through it. | Diffuse reflection -when a surface reflects rays of light in a broad range of directions. |

| | | | | Opaque -cannot be seen through and does not allow light to pass through it. | Absorb- when the object soaks up some of the light waves. Angle of incidence- distance of the angle between the ray of light and the perpendicular line. Refraction- when light changes direction, or bends, when it moves from one material to another. Lens- a piece of glass or other see-through material that is curved on one or both side | |
|-------------------------------------|---------------|---|-------------|--|---|--|
| Key Concept | Overview | EYFS | Key Stage 1 | LKS2 | UKS2 | |
| Investigate sound and hearing | Торіс | Throughout topics: | | s | Sound | |
| | NC objectives | Listen carefully to rhymes and songs, paying attention to how they sound. | | Identify how sounds are made, associating some | e of them with something vibrating. | |
| | | Explore and engage in music making and dance, performing solo or in groups. | | Recognise that vibrations from sounds travel three | vel through a medium to the ear. | |
| | | Listen attentively, move to and talk about music, | | Find patterns between the pitch of a sound and f | features of the object that produced it. | |
| | | | | Find patterns between the volume of a sound an | d the strength of the vibrations that produced it. | |
| | | | | Recognise that sounds get fainter as the distance | e from the sound source increases. | |
| | Knowledge | I know sounds can be loud and quiet. | | That sounds are produced by objects vibrating. | | |
| | | I know instruments can make sounds. | | Specific example/s to be taught: | | |
| | | l know I can make sounds with my voice and | | Vibrations cause the air touching the source of the to vibrate, which the brain experiences as sound | he noise to vibrate, which causes the air further away waves. | |
| | | body. | | Examples: Guitar. | | |
| | | | | | - | |
| | | | | That travel through different mediums (solids, lic | quids and gases) through to the ear. | |
| | | | | Specific example/s to be taught: | | |
| | | | | Sound through magnetic objects | | |

| | | Sound through air |
|------------|------------|---|
| | | Sound through water. |
| | | |
| | | |
| | | |
| | | |
| | | To know that there are patterns between the pitch of a sound and the object which produces it. |
| | | |
| | | Specific example/s to be taught: |
| | | |
| | | Smaller, shorter, thinner, tighter and more dense objects produce higher pitched sounds. |
| | | Larger, longer, thicker, looser, and less dense objects make lower sounds. |
| | | |
| | | |
| | | |
| | | |
| | | |
| | | To know that there are patterns between the volume of sound and the strength of the vibrations |
| | | which produced it. |
| | | |
| | | |
| | | Specific example/s to be taught: |
| | | The larger the vibration, the louder the sound. |
| | | The smaller the vibration, the quieter the sound. |
| | | The singled die violation, die quieter die sound. |
| | | |
| | | |
| | | |
| | | To know that sounds get fainter as the distance from the sound source increases. |
| | | |
| | | |
| | | Specific example/s to be taught: |
| | | Hand claps, sniffs, coughs, foot stamps, thigh slaps – the further the source, the quieter the sound. |
| | | |
| Vocabulary | Loud | Sound - created when something vibrates and sends waves of energy (vibration) into our ears. |
| | Quiet | statice there something visites and senas wates of cherby (visitation) into our ears. |
| | | |
| | Bang | Source – sound is caused by vibrations that travel through the air. |
| | Noise | |
| | Sound | Vibration - created when something vibrates and sends waves of energy (vibration) into our ears. |
| | Music | |
| | Instrument | |
| | songs | Pitch (high/low) - high-pitched sounds have high frequencies (a lot of quick waves). The more peaks |
| | 5 | in this time, the higher the pitch. Low-pitched sounds have low frequencies (a smaller number of |
| | | waves. |
| | | |
| | | Volume how loud or quiet the cound is |
| | | Volume - how loud or quiet the sound is. |
| | | |
| | | Insulation - the material or technique used to reduce the rate at which sound travels. |
| | | |
| | | |
| | | |
| 1 | | |

| | | EYFS | KS1 | KS2 |
|--------------------|---------------|---|--|--|
| Earth and Space | NC objectives | | To observe changes across the four seasons To observe and describe the weather associated with seasons and how day length changes. | 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 |
| | Knowledge | year, eg Christmas is in winter, Easter is in spring, summer holidays are in the summer and Halloween is in autumn. | That there are four seasons – spring, summer, autumn, winter. Summer: t-shirt, shorts, sunhat Spring: t-shirt, shorts, jumper/cardigan Autumn: Long trousers, long-sleeved t-shirt and jumper/cardigan, coat. Winter: Warm trousers, tops and jumpers, hats, scarves, gloves, wellies. That in winter we can expect different weather to in summer, and that autumn / spring are transitional seasons. Specific example/s to be taught: In winter, the weather is often very cold and we might get snow. It summer, it is often hot and sunny. That in the summer we have longer days than in the winter. Specific example/s to be taught: | That the Earth and other planets move relative to the sun. Specific example/s to be taught: The Earth moves in orbit around the Sun in 365 days, 6 hours and 9 minutes. Every four years, the 6 hours and 9 minutes add up to one extra day, and we have a leap year. We use a heliocentric model to demonstrate how the Sun is at the centre of the solar system That the moon orbits the Earth Specific example/s to be taught: It takes the Moon 28 days to orbit the Earth. It also completes one rotation in about 27 days That the Sun, Earth and Moon are approximately spherical in shape. Specific example/s to be taught: A planet is round because of gravity, and a planet's gravity pulls equally from all sides That we have day and night due to the rotation of the Earth on its' axis. This makes the sun look as though it is moving, when it isn't. Specific example/s to be taught: |
| | | | In summer we get up to 16 hours 28 minutes of daylight. In winter we can get as little as 7 hours and 50 minutes of daylight. | |
| | Vocab | Seasons Changes | Seasons - The four parts of the year (spring, summer, autumn, winter). Weather - What the air is like outside | Sun - a huge star that Earth and other planets in our solar system orbit around. Star – a giant ball of gas held together by its own gravity. |
| | | Summer | weather - what the air is like outside (windy, cloudy, sunny, rainy, dry, warm, cold). | Moon – a natural satellite which orbits the Earth and other planets. |

| Winter | Temperature - A measure of how hot or cold it is. Sunrise - The time when the sun comes up. Sunset - The time when the sun goes down. Compare - To think about what is the same and what is different. | Planet – a large object, round or nearly round, which orbits a star. Solar system – the sun and everything which orbits around the sun. Satellite – Any object or body in space that orbits something else, for example the moon is a satellite of the Earth. Orbit – To move in a regular, repeating curved path around another object. Rotate – To spin, eg Earth rotates on it's own axis Axis – an imaginary line that a body rotates around. Geocentric model – A belief that people used to have that other planets, and the sun, orbited around Earth. Heliocentric model – The structure of the solar system where the planets orbit around the sun. |
|--------|---|---|
|--------|---|---|