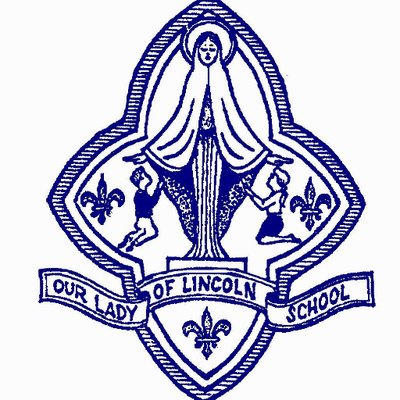
**Our Lady of Lincoln Catholic Primary School**

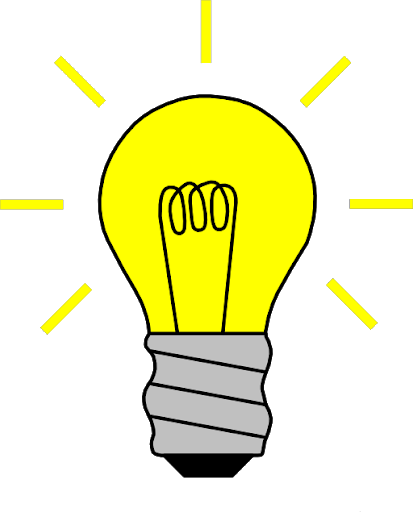
**Physics Curriculum**



**Physics Whole School Long Term Overview**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |
| **Year 1** |  |  |  |  | **Seasonal Changes**  Do all seasons look the same? |
| **Year 2** |  |  |  |  |  |
| **Year 3** | **Light**  Would the world survive without light? | **Forces and Magnets**  Are magnets useful? |  |  |  |
| **Year 4** |  |  | **Electricity**  Can electricity be controlled? | **Sound**  Can sound be maninpulated? |  |
| **Year 5** |  | **Forces**  Can a force be changed? |  |  | **Earth and Space**  Is it important to know about other places other than Earth? |
| **Year 6** | **Light**  Is light ever dangerous? |  | **Electricity**  Is it important to find renewable sources of energy? |  |  |

**Light**



**Year 3 Science Programme of Study - Physics**

**Project:**     Light

**Question:**   Would the world survive without light?

|  |  |  |
| --- | --- | --- |
| **Curriculum aims**: Be positive, Be respectful, Be resilient, Be independent, Be knowledgeable, Be ambitious, Be confident. | | |
| **Curriculum drivers**: **Communication, Health, World Citizen, Beliefs, Aspiration** | | |
| **Key Knowledge (the non-negotiable facts)**  **To know statements:-**  **Ask the project question at the start of the unit:**  **To know that we need light in order to see things and that dark is the absence of light**  **To know that light is reflected from surfaces**   * *When light from an object is reflected by a surface, it changes direction. It bounces off the surface at the same angle as it hits it.* * *Smooth, shiny surfaces such as mirrors and polished metals reflect light well. Dull and dark surfaces such as dark fabrics do not reflect light well.*   **To know that light from the sun can be dangerous and we must protect our eyes (Health)**   * *To****protect your eyes****from****harmful****solar radiation, you****should****wear sunglasses that block 100 percent UV whenever you are outdoors in daylight.****Your eyes****need****protection****even on cloudy days because the****sun's****damaging UV rays****can****penetrate cloud cover.*   **To know about different light sources**   * *A****source****of light makes light. The****Sun****and other****stars****,****fires****,****torches****and****lamps****all make their own light and so are examples of****sources of light****.* * *Some animals, such as****fireflies****and****glow-worms****, are light sources. They make their own light to attract mates.*   **To recognise that shadows are formed when light from a light source is blocked by opaque objects**   * ***Shadows****are****formed****when light from a source is blocked by an opaque object. ​​​​​​​The closer an object is to the source of light the bigger the****shadow****.****Shadows****from the sun can be used to tell the time in a sundial.*   **To know that there are patterns in the way that the size of shadows change**   * ***Shadows****can****change****their size. As light moves towards the object, the****shadow****becomes larger. As light moves away from the object, the****shadow****becomes smaller. ... As light moves closer, the****shadow****becomes longer and wider.*     **To know the work of a leading Scientist Joseph Swan (Aspiration)**   * *Sir****Joseph****Wilson****Swan****(31 October 1828–27 May 1914) was an English physicist and chemist who was well known because he created the incandescent light bulb, about a year before Thomas Edison. His house was the first in the world to be lit by electric light bulbs.*   **Refer back to the project question at the end of the unit:** | **Working Scientifically skills from progression document**  \* Make systematic and careful observations.  \* Help to make decisions about what observations to make, how long to make them for and the type of simple equipment that might be used.  \* Begin to look for naturally occurring patterns and relationships and decide what data to collect to identify them.  \* With help, pupils should look for changes, patterns, similarities and differences in their data in order to draw simple conclusions and answer questions.  \*Use relevant simple scientific language to discuss their ideas and communicate their findings in ways that are appropriate for difference audiences, including oral and written explanations, displays or presentations of results and conclusions. | **Core vocabulary:**  **Tier 3**  **Opaque**  UV rays  Solar  **Tier 2**  Shadow  Protection  Absence |
| **Curriculum threads to be covered:-**  **Reading** –   * Listening to and discussing a wide range of non-fiction and reference books or textbooks. * Checking that the text makes sense to them, discussing their understanding and explaining the meaning of words in context. * Identifying main ideas drawn from more than one paragraph and summarising these. * Participate in discussion about both books that are read to them and those they can read for themselves, taking turns and listening to what others say.   **Computing** –  **British Values –**   * **To encourage students to accept responsibility for their behaviour, show initiative, and to understand how they can contribute positively to the lives of those living and working in the locality of the school and to society more widely** (grow in awareness of responsible use of light energy; grow in awareness of how their choices, when exposed to light, can keep them and others safe)   **PSHE** –  Health and Wellbeing ˃Healthy Lifestyles- CORAM Life Education- ***Body Team Work*** (Year 3) | | |
| **Previous learning which will support the learning and skill development in this topic:**  Seasonal changes: Year 1:  To know the changes across the four seasons  To know about the changes in each season and describe weather associated with the seasons  To know how day length varies across seasons ( world citizen )  To know how the sun can be dangerous during the summer and we must protect ourselves ( Health)  EYFS-ELG 06 Health and self-care             ELG 14 The world | | |

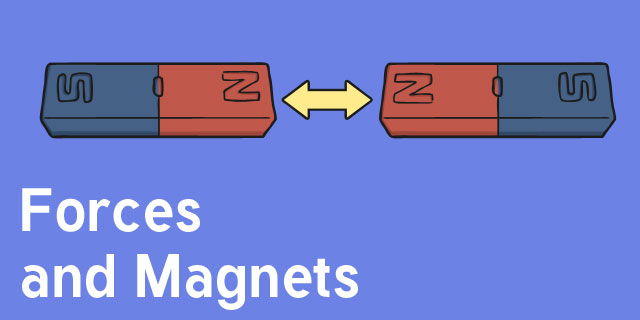
**Year 6  Science Programme of Study - Physics**

**Project:**     Light

**Question:**  Is light ever dangerous?

|  |  |  |
| --- | --- | --- |
| **Curriculum aims**: Be positive, Be respectful, Be resilient, Be independent, Be knowledgeable, Be ambitious, Be confident. | | |
| **Curriculum drivers**: **Communication, Health, World Citizen, Beliefs, Aspiration** | | |
| **Key Knowledge (the non-negotiable facts)**  **To know statements:-**  **Ask the project question at the start of the unit:**  **To know light travels in straight lines**   * *Light travels in straight lines to explain why shadows have the same shape as the objects that cast them* * *Light appears to travel in straight lines*   **To know that different mediums see and use light in different ways**  **To know the structure of the human eye**   * *Light is reflected into our eyes* * *Light travels from a light source then to our eye* * *Recognise and label the parts: iris, pupil, cornea, retina, lens, sclera, optic nerve.*   **To know the work of a leading Scientist in the field of light- Thomas Edison (Aspiration)**   * *He is an American inventor best known for the invention of the domestic light bulb . He didn’t invent the first light bulb but he did create a gentle light in a bulb that could burn for a good amount of time.* * *He worked with a team.* * *He said , ‘ Genius is one per cent inspiration, ninety- nine per cent perspiration.’* * *He also invented the electric power system that allowed the bulbs to work* * *He invented over 1000 items successfully in his life time ( over 1093 patents)* * *He lost most of his hearing by his 12th birthday*   **To know about the carbon footprint and it’s effect on climate change (world citizen)**   * *Light pollution is an important phenomena in our World today* * *Street light are left on over night and this causes great debate across the country*   **Refer back to the project question at the end of the unit:** | **Working Scientifically skills from progression document**  \* Use their Science experiences to explore ideas and raise different kinds of questions.  \* Talk about how Scientific ideas have developed over time.  \* Recognise which secondary sources will be most useful to research their ideas and begin to separate opinion from fact.  \* Recognise when and how to set up comparative and fair tests and explain which variables need to be controlled and why.  \* Make their own decisions about what observations to make, what measurements to use and how long to make them for.  \* Choose the most appropriate equipment to make measurements with increasing precision and explain how to use it accurately. Take repeat measurements where appropriate.  \* Use relevant scientific language and illustrations to discuss, communicate and justify their scientific ideas.  \* Use oral and written forms such as displays and other presentations to report conclusions, causal relationships and explanations of degree of trust in results.  \*Use their results to make predictions and identify when further observations, comparative and fair tests might be needed. | **Core vocabulary:**  **Tier 3**  iris, pupil, cornea, retina, lens, sclera, optic nerve.  **Tier 2**  Invention  Power system  Domestic  Straight  Inspirational  Reflected  Climate  Debate  Resources  pollution |
| **Curriculum threads to be covered:-**  **Reading**   * continuing to read and discuss an increasingly wide range of non-fiction and reference books or textbooks * asking questions to improve their understanding * distinguish between statements of fact and opinion   **Computing**  **British Values**   * **To enable students to develop their self-knowledge, self-esteem and self-confidence** *(grow in awareness of functions and care of the human eye and possible effects of outside elements on the human eye).* * **To encourage students to accept responsibility for their behaviour, show initiative, and to understand how they can contribute positively to the lives of those living and working in the locality of the school and to society more widely** *(explore responsible use of light energy resources; explore light energy saving devices and techniques).*   **PSHE**   * Living in the Wider World ˃Caring for the Environment- CORAM Life Education- ***Action Stations*** (Year 6) | | |
| **Previous learning which will support the learning and skill development in this topic:**  Light: Year 3:  To know that we need light in order to see things and that dark is the absence of light  To know that light is reflected from surfaces  To know that light from the sun can be dangerous and we must protect our eyes  To know about different light sources  To know that there are patterns in the way that the size of shadows change  To know the work of a leading Scientist Joseph Swan  EYFS-ELG 13 People and communities             ELG 14 The world | | |

**Forces and Magnets**



**Year  3 Science Programme of Study - Physics**

**Project:**     Forces and Magnets

**Question:**  Are magnets useful?

|  |  |  |
| --- | --- | --- |
| **Curriculum aims**: Be positive, Be respectful, Be resilient, Be independent, Be knowledgeable, Be ambitious, Be confident. | | |
| **Curriculum drivers**: **Communication, Health, World Citizen, Beliefs, Aspiration** | | |
| **Key Knowledge (the non-negotiable facts)**  **To know statements:-**  **Ask the project question at the start of the unit:**  **To know the how objects move on different surfaces.**   * *Gravity pulls objects to the ground* * *Friction is a sticking force the resistance that a surface or object encounters when moving over another surface or object* * *Friction both stops and makes things move it causes things to stick and rub* * *And causes slipping and sliding*   **To know that some forces need contact between two objects but magnetic forces can act at a distance.**   * *The Earth is a magnetized planet* * *The Earth’s magnetic field is like that produced by a large bar magnet* * *The south magnetic pole coincides with the north geographic poles*   **To know how magnets attract and repel and attract some objects and not others and to know that a magnet has two poles. To know whether 2 magnets will attract or repel depending on the way their poles are facing.**   * *Every magnet has a North and South pole* * *When you place the north pole of one magnet near the south pole of another magnet they are attracted to one another* * *When you place like poles of 2 magnets they will repel*   **To know how to compare and group together a variety of everyday materials on basis of whether they are attracted to a magnet.**   * *You can test whether an object is magnetic or not by holding another magnet close to it* * *If the object is attracted it will move closer* * *You can group objects into metals, semi-metals, non- metals, conductors or insulators.*   **Refer back to the project question at the end of the unit:** | **Working Scientifically skills from progression document**  \* Should be given a range of scientific experiences including different types of Science enquiries to answer questions.  \* Start to make their own decisions about the most appropriate type of Scientific enquiry they might use to answer questions.  \*Recognise when a fair test is necessary and help to decide how to set it up.  \* Talk about criteria for grouping, sorting and classifying; and use simple keys.  \* Make systematic and careful observations.  \* Help to make decisions about what observations to make, how long to make them for and the type of simple equipment that might be used.  \* Collect and record data from their own observations and measurements in a variety of ways: notes, bar charts and tables, standard units, drawings, labelled diagrams, keys and help make decisions about how to analyse this data.  \* With help, pupils should look for changes, patterns, similarities and differences in their data in order to draw simple conclusions and answer questions. | **Core vocabulary:**  **Tier 3**  Poles  Repels  Attract  Force  Magnetic  Non magnetic  Gravity  Friction  Magnetized  Magnetic field  Conductor  insulator  Tier 2  Magnet  Earth  Surfaces |
| **Curriculum threads to be covered:-**  **Reading** –   * Listening to and discussing a wide range of non-fiction and reference books or textbooks. * Using dictionaries to check the meaning of words that they have read. * Asking questions to improve their understanding of a text. * Participate in discussion about both books that are read to them and those they can read for themselves, taking turns and listening to what others say.   **Computing** –  **British Values –**   * **To enable students to develop their self-knowledge, self-esteem and self-confidence** (grow in awareness of physical force elements and how these contribute to other occurrences; to grow in awareness that learning from close observations make us aspirational scientific thinkers).   **PSHE** – N/A | | |
| **Previous learning which will support the learning and skill development in this topic:**  Everyday materials : Year 2:  To know about how materials are recycled  • What is a magnet? How is it used?  EYFS-ELG 14 The world | | |

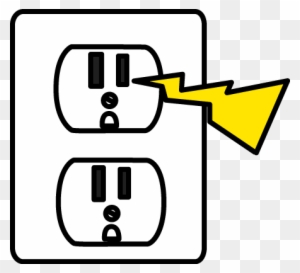
**Year  5  Science Programme of Study - Physics**

**Project:**     Forces

**Question:**   Can a force be changed?

|  |  |  |
| --- | --- | --- |
| **Curriculum aims**: Be positive, Be respectful, Be resilient, Be independent, Be knowledgeable, Be ambitious, Be confident. | | |
| **Curriculum drivers**: **Communication, Health, World Citizen, Beliefs, Aspiration** | | |
| **Key Knowledge (the non-negotiable facts)**  **To know statements:-**  **Ask the project question at the start of the unit:**  **To know how to explain that unsupported objects fall towards the Earth because of the force called gravity acting between the Earth and the falling object.**   * *Gravity is a force which tries to pull two objects toward each other* * *Anything which has mass also has gravitational pull* * *Gravity holds the planets in orbit around the sun and keeps the Moon in orbit around the Earth*   **To know what air resistance, water resistance and friction are, that act between moving surfaces.**   * *Friction occurs when objects move through water or air and another material* * *Air resistance is a type of friction* * *Air particles hit the moving object* * *Some object shave streamlined shapes to help them move*   **To know that some mechanisms including levers, pulley and gears allow a smaller force to have a greater effect**   * *A lever is a simple machine usually a beam pivoted at a foxed hinge or fulcrum* * *A lever is a rigid body capable of rotating on a point of itself* * *A pulley system can attach to an object and usually uses a wheel or axle* * *A gear is a toothed wheel that works with others to alter the relation between the speed of driving mechanism* * *Link to gymnastic lessons/ bring in things from home like mechano*   **To know the work of a leading Scientist Isaac Newton (Aspiration)**   * *He worked out how gravity works.* * *He studied light in detail and the colours of the rainbow are formed* * *He wrote Principia Mathematica in where is wrote about the laws of motion*   **Refer back to the project question at the end of the unit:** | **Working Scientifically skills from progression document**  \* Recognise which secondary sources will be most useful to research their ideas and begin to separate opinion from fact.  \* Recognise when and how to set up comparative and fair tests and explain which variables need to be controlled and why.  \* Make their own decisions about what observations to make, what measurements to use and how long to make them for.  \* Use relevant scientific language and illustrations to discuss, communicate and justify their scientific ideas.  \* Use oral and written forms such as displays and other presentations to report conclusions, causal relationships and explanations of degree of trust in results. | **Core vocabulary:**  **Tier 3**  Gravity  Friction  Air resistance  Levers  Pulleys  Gears  Gravitational  Mass  **Tier 2**  Falling  Earth  Force  Surface  effect |
| **Curriculum threads to be covered:-**  **Reading**   * continuing to read and discuss an increasingly wide range of non-fiction and reference books or textbooks * reading books that are structured in different ways and reading for a range of purposes   **Computing** –  **British Values –**   * **To encourage students to accept responsibility for their behaviour, show initiative, and to understand how they can contribute positively to the lives of those living and working in the locality of the school and to society more widely** *(grow in awareness of impact of various forms of Forces and how we can channelize them for positive and productive purposes).*   **PSHE** -  N/A | | |
| **Previous learning which will support the learning and skill development in this topic:**  Magnets and Forces: Year 3:  To know the how objects move on different surfaces  To know that some forces need contact between two objects but magnetic forces can act at a distance.  To know how magnets attract and repel and attract some objects and not others and to know that a magnet has two poles. To know whether 2 magnets will attract or repel depending on the way their poles are facing.  To know how to compare and group together a variety of everyday materials on basis of whether they are attracted to a magnet.  EYFS-ELG 04 Moving and handling             ELG 14 The world | | |

**Electricity**



**Year 4 Science Programme of Study - Physics**

**Project:**     Electricity

**Question:**  Can electricity be controlled?

|  |  |  |
| --- | --- | --- |
| **Curriculum aims**: Be positive, Be respectful, Be resilient, Be independent, Be knowledgeable, Be ambitious, Be confident. | | |
| **Curriculum drivers**: **Communication, Health, World Citizen, Beliefs, Aspiration** | | |
| **Key Knowledge (the non-negotiable facts)**  **Ask the project question at the start of the unit:**  **To know appliances that run on electricity**   * *Look at house hold appliances that children will know: fridge, oven, washing machine, boiler, iron, dryer, lights, hoover, tv* * *Other appliances cars now*   **To know how to construct a simple electrical circuit**   * *Include parts: cells, wires, bulbs, switches and buzzers* * *Complete circuit is a closed path of electrons flow to provide power* * *Always need: a power source such as a battery* * *You need insulated wires – discuss meaning of insulation* * *There must be no breaks in the circuits*   **To know when a circuit is complete and incomplete**   * *A circuit is incomplete it is because it has a break or something missing* * *It is when the path has been interrupted or opened at some point so the current can’t flow* * *An open circuit is an incomplete one*   **To know the importance of a switch in a circuit**   * *A switch is an electrical device that is used to break or make an electrical circuit manually or automatically* * *When the switch is activated the current flows between the two terminals of the switch* * *When the switch is off the current doesn’t flow between the 2 terminals*   **To know common conductors and insulators**   * *Metals are good conductors: copper, gold, aluminium and silver* * *Conductors conduct electrical current very easily because of their free electrons* * *Insulators oppose electrical current and make poor conductors: glass, air, plastic, rubber and wood*   **To know the work of a leading Scientist Nikola Tesla (Aspiration)**   * *He was an inventor* * *He worked on electrics and radio technology* * *He discovered that electrical machines work best using alternating current and reversing the flow of electricity and is AC.* * *He had a dispute with his ex-boss Thomas Edison*   **To know why it is important to save electricity (Health)**   * *Saving electricity reduces energy costs and reduces how much carbon dioxide is released into the atmosphere*   **Refer back to the project question at the end of the unit:** | **Working Scientifically skills from progression document**  \* Raise their own relevant questions about the world around them.   \* Start to make their own decisions about the most appropriate type of Scientific enquiry they might use to answer questions.   \* Make systematic and careful observations.   \* Help to make decisions about what observations to make, how long to make them for and the type of simple equipment that might be used.   \*Use relevant simple scientific language to discuss their ideas and communicate their findings in ways that are appropriate for difference audiences, including oral and written explanations, displays or presentations of results and conclusions.   \* With support, they should identify new questions arising from the data, making predictions for new values within or beyond the data they have collected and finding ways of improving what they have already done. | **Core vocabulary:**  **Tier 3**  cells,  wires,  bulbs  switches  buzzer  conductors  insulators  circuit  component  volts  **Tier 2**  Battery  Power  Wires  Open  Flow  Complete  Incomplete |
| **Curriculum threads to be covered:-**  **Reading**   * Listen to and discuss a range of non-fiction and reference books or textbooks. * Use dictionaries to check the meaning of words they have read. * Checking that the text makes sense to them, discussing their understanding and explaining the meaning of words in context.   **Computing** –  **British Values –**   * **To encourage students to accept responsibility for their behaviour, show initiative, and to understand how they can contribute positively to the lives of those living and working in the locality of the school and to society more widely.** (Grow in awareness of positive and responsible use of energy devices; aware of energy saving systems and strategies and its impact on the global community- saving energy minimises energy consumption and save natural resources).   **PSHE**   * Health and Wellbeing ˃Healthy Lifestyles- CORAM Life Education- ***Danger, Risk or Hazard*** (Year 4 ) | | |
| **Previous learning which will support the learning and skill development in this topic:**  Light: Year 3: To know about different light sources. Maybe link to DT  EYFS-ELG 15 Technology | | |

**Year 6 Science Programme of Study - Physics**

**Project:**     Electricity

**Question:**   Is it important to find renewable sources of energy?

|  |  |  |
| --- | --- | --- |
| **Curriculum aims**: Be positive, Be respectful, Be resilient, Be independent, Be knowledgeable, Be ambitious, Be confident. | | |
| **Curriculum drivers**: **Communication, Health, World Citizen, Beliefs, Aspiration** | | |
| **Key Knowledge (the non-negotiable facts)**  **To know statements:-**  **Ask the project question at the start of the unit:**  **To know that brightness and sound in a circuit can be attributed to voltage of cells**   * *In increasing voltage this increases the brightness of the bulb* * *When a bulb is in series this increases voltage* * *Increasing the number of bulbs in a series decreases the brightness*   **To know and give reasons for variations in components functions such as brightness of bulb**   * *Look at what happens when they try different components motors; switches, bulbs and buzzers* * *Parallel and series circuits*   **To know the recognised symbols and be able to draw them (Communication)**   * *Represent a simple circuit in a diagram.* * *Symbols for bulb, buzzer, bulb, motor, cell/ battery*   **To know about renewable sources of energy and alternatives to electricity (World Citizen)**   * *To build on knowledge from year 4* * *To know about wind, wave and solar power* * *To look at the future of electricity*   **To know about why it is important to save electricity and conserve energy (World Citizen)**   * To look at the invention of the electric car and who these are available to * Build on debate from year 4 learning   **Refer back to the project question at the end of the unit:** | **Working Scientifically skills from progression document**  \* Select and plan the most appropriate type of scientific enquiry to use to answer Scientific questions.   \* Recognise which secondary sources will be most useful to research their ideas and begin to separate opinion from fact.  \* Recognise when and how to set up comparative and fair tests and explain which variables need to be controlled and why.  \* Decide how to record data and results of increasing complexity from a choice of familiar approaches: scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.  \*Use their results to make predictions and identify when further observations, comparative and fair tests might be needed. | **Core vocabulary:**  **Tier 3**  Voltage  Components  Conserve  Series  Parallel  Motor  Cell  **Tier 2**  Light  Electricity  Bulb  Buzzer  energy |
| **Curriculum threads to be covered:-**  **Reading**   * discussing their understanding and exploring the meaning of words in context * retrieve, record and present information from non-fiction   **Computing –**  **British Values –**   * **To encourage students to accept responsibility for their behaviour, show initiative, and to understand how they can contribute positively to the lives of those living and working in the locality of the school and to society more widely** *(grow in awareness of responsible use of electrical devices; explore energy saving electrical devices and techniques).*   **PSHE**   * Living in the Wider World ˃Caring for the Environment- CORAM Life Education- ***Happy Shoppers*** (Year 6) | | |
| **Previous learning which will support the learning and skill development in this topic:**  Electricity: Year 4:  To know appliances that run on electricity  To know how to construct a simple electrical circuit  To know when a circuit is complete and incomplete  To know the importance of a switch in a circuit  To know common conductors and insulators  To know why it is important to save electricity (Health)  Forces and Magnets: Year 3:  To know that some forces need contact between two objects but magnetic forces can act at a distance.  To know the work of a leading Scientist Michael Faraday who contributed to the study of electromagnetism ( aspiration)  EYFS-ELG 15 Technology | | |

**Sound**



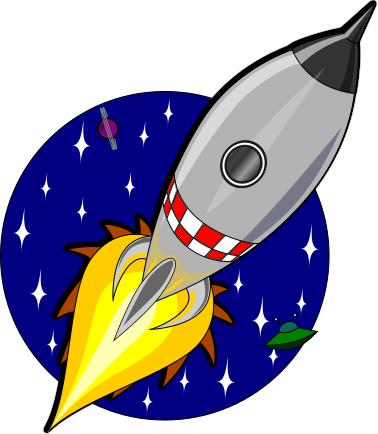
**Year   4  Science Programme of Study - Physics**

**Project:**     Sound

**Question:**   Can sound be manipulated?

|  |  |  |
| --- | --- | --- |
| **Curriculum aims**: Be positive, Be respectful, Be resilient, Be independent, Be knowledgeable, Be ambitious, Be confident. | | |
| **Curriculum drivers**: **Communication, Health, World Citizen, Beliefs, Aspiration** | | |
| **Key Knowledge (the non-negotiable facts)**  **To know statements:-**  **Ask the project question at the start of the unit:**  **To know how sounds are made.**   * ***Sounds****are****made****when objects vibrate. The vibration makes the air around the object vibrate and the air vibrations enter your ear.* * *You hear them as****sounds****. You cannot always see the vibrations, but if something is making a****sound****, some part of it is always vibrating.*   **To know that the vibrations from sound travel through a medium to ear**   * ***Sound****waves enter the outer****ear****and****travel****through a narrow passageway called the****ear****canal, which leads to the eardrum.  The bones in the middle****ear****amplify, or increase, the****sound****vibrations and send them to the cochlea, a snail-shaped structure filled with fluid, in the inner****ear****.*   **To know the simple parts of the ear**   * *The eardrum, cochlea, outer ear, ear canal.* * *The human****ear****has****three main****sections, which consist of the outer****ear****, the middle****ear****, and the inner****ear****. Sound waves enter your outer****ear****and travel through your****ear****canal to the middle****ear****.*   **To know patterns between pitch of a sound and features of the object that produced it**   * *A drum with a tight skin makes a high pitched wave. Find out more about sound waves and pitch.* * *The pitch of a sound is how high or low the sound is. A high sound has a high pitch and a low sound has a low pitch.* * *A tight drum skin gives a higher pitched sound than a loose drum skin.* * *Strings have thicker strings for lower pitch* * *Woodwind instruments have a different sounds like a descant recorder has a deeper sound* * *Guitar has a higher note when you hold the string down on the fret*   *( Please use Anne Nugent’s subject knowledge here! Or better still get in an orchestra)*  **To know patterns with volume of sound and strength of vibrations**   * *Djemba drums in school have different volumes and drums can have tension* * *Sounds are vibrations that travel through the air. A weak vibration doesn't travel very far. Discover more about volume.*   **To know that sounds get fainter as the distance from the sound source increases**   * *As you move away from the clock, the alarm****sounds****quieter, so our****distance****from the****source****of a****sound****will affect how loud it seems.*   **To know the work of Evelyn Glennie, a dead percussionist who hears sounds through vibrations. (Aspiration)**   * *These musicians hear sounds through vibrations* * *Observe the musician at work and listen to their music* * *Focus on overcoming barriers.*   **Refer back to the project question at the end of the unit:** | **Working Scientifically skills from progression document**    \* Raise their own relevant questions about the world around them.  \* Should be given a range of scientific experiences including different types of Science enquiries to answer questions.  \* Make systematic and careful observations.  \* Help to make decisions about what observations to make, how long to make them for and the type of simple equipment that might be used.  \*Use relevant simple scientific language to discuss their ideas and communicate their findings in ways that are appropriate for difference audiences, including oral and written explanations, displays or presentations of results and conclusions.  \* With support, they should identify new questions arising from the data, making predictions for new values within or beyond the data they have collected and finding ways of improving what they have already done. | **Core vocabulary:**  **Tier 3**  ear drum  inner ear  cochlea  **Tier 2**  wave  pitch  vibrations |
| **Curriculum threads to be covered:-**  **Reading**   * Listening to and discussing a wide range of non-fiction and reference books or textbooks. * identifying how language, structure and presentation contribute to meaning.   **Computing –**  **British Values –**   * **To enable students to develop their self-knowledge, self-esteem and self-confidence** (grow in awareness of structure of the human ear and how we care for it). * **To further tolerance and harmony between different cultural traditions by enabling students to acquire an appreciation of and respect for their own and other cultures** (develop respect for use of sounds – music/rhythms in other cultures) * **To encourage respect for other people** (grow in awareness of how individual needs may cause others to use additional support for hearing- sign language, hearing aids).   **PSHE** - N/A | | |
| **Previous learning which will support the learning and skill development in this topic:**  Links to music and sound. Link year 4 humans unit and parts of digestive system with ear.  EYFS-ELG 16 Exploring and using media and materials | | |

**Earth and Space**



**Year 1 Science Programme of Study - PHYSICS**

**Project:** Seasonal changes

**Question:** Do all seasons look the same?

|  |  |  |
| --- | --- | --- |
| **Curriculum aims**: Be positive, Be respectful, Be resilient, Be independent, Be knowledgeable, Be ambitious, Be confident. | | |
| **Curriculum drivers**: **Communication, Health, World Citizen, Beliefs, Aspiration** | | |
| **Key Knowledge (the non-negotiable facts)**  **To know statements:-**  **Ask the project question at the start of the unit:**  **To know the changes across the four seasons**   * *Earth’s tilted axis causes the seasons* * *The passing of a year can bring a marked change in the weather and environment* * *The four seasons; winter, spring, summer and autumn can vary significantly in characteristics and changes in the world around them*   **To know about the changes in each season and describe weather associated with the seasons**   * *Spring is a time for growing and when seeds start to grow and animals that have been hibernating wake up from their sleeps. When some snow melts this can cause flooding* * *Summer, temperatures may increase to the hottest of the year. If they spike to high it can cause heat waves or droughts. Which is trouble for animals and humans too.* * *In autumn temperatures cool again. Plants may become dormant. Animals may prepare themselves for the cold weather and maybe travel to warmer places.* * *Winter brings colder weather. Some areas experience snow or ice or even cold rain. Animals find ways to warm themselves.*   **To know how day length varies across seasons**   * *The Earth rotates on an axis and the length of daytime varies with seasons on the planet’s surface* * *Areas which are tilted towards the sun are experiencing summer so days appear lighter and longer and in the winter days appear shorter and there are less day light hours*   **To know how the sun can be dangerous during the summer and we must protect ourselves (Health)**   * *The sun has harmful rays and too much exposure can cause damage to our skin* * *Sunlight also contains vitamin d which is good for us* * *Sunlight is good for wellbeing too and helping us feel good*   **To know that the weather is a powerful source and can affect people’s lives (World Citizen)**   * *Flooding can be so dangerous and can harm people and their homes and this can happen locally. This comes from too much rain.* * *Too much sun can cause dry land and forest fires in very hot countries and even some as close as Europe* * *Snow in winter can cause problems.*   **Refer back to the project question at the end of the unit:** | **Working Scientifically skills from progression document**  \* Explore the world around them and raise their own simple questions.  \* Experience different types of science enquiries, including practical activities.  \*Observe closely using simple equipment with help, observe changes over time.  \* With guidance, they should begin to notice patterns and relationships.  \* Use their observations and ideas to suggest answers to questions.  \* Talk about what they have found out and how they have found it out. | **Core vocabulary:**  **Tier 3**  Seasons  Drought  Dormant  Axis  **Tier 2**  Summer  Winter  Autumn  Spring  Earth  Sun |
| **Curriculum threads to be covered:-**  Reading –   * Listening to and discussing a wide range of poems, stories and non-fiction at a level beyond that at which they can read independently. * Being encouraged to link what they read or hear read to their own experiences. * Discussing word meanings, linking new meanings to those already known. * Drawing on what they already know or on background information and vocabulary provided by the teacher. * Discussing the significance of the title and events.   Computing –  British Values – To enable students to develop their self-knowledge, self-esteem and self-confidence*(self-knowledge to stay safe in different seasonal changes and grow in confidence when learning about seasonal changes around the world).*    PSHE – Living in the Wider World ˃ Caring for the Environment- Coram LIFE Education- ***Around and About the School*** (Year 1) | | |
| **Previous learning which will support the learning and skill development in this topic:**  Knowledge from reception about the seasons and their names. They will have been collecting conkers and leaves and discussed why the leaves fall.  EYFS-ELG 05 Health and self-care  ELG 14 The world | | |

**Year 5 Science Programme of Study - Physics**

**Project:**     Earth and Space

**Question:**   Is it important to learn about places other than Earth?

|  |  |  |
| --- | --- | --- |
| **Curriculum aims**: Be positive, Be respectful, Be resilient, Be independent, Be knowledgeable, Be ambitious, Be confident. | | |
| **Curriculum drivers**: **Communication, Health, World Citizen, Beliefs, Aspiration** | | |
| **Key Knowledge (the non-negotiable facts)**  **To know statements:-**  **Ask the project question at the start of the unit:**  **To know the how the Earth moves and other plants in relation to the Sun in the solar system**   * *The****Earth revolves****(orbits) around the****Sun****in one year. The****Earth's****rotation axis is tilted****relative****to the plane of its orbit around the****Sun****.* * *This tilt of the****Earth****is responsible for the seasons as the****Earth****orbits the****Sun****. The****Sun****provides energy that sustains all life on****Earth***   **To know the movement of the Moon relative to the Earth**   * *The****Moon moves****around the****Earth****in an approximately circular orbit, going once around us in approximately 27.3 days, or one sidereal period of revolution.* * *As it****does****this its position changes,****relative****to the stars. ... The apparent motion of the****Moon****from hour to hour; each hour it****moves****about one diameter to the East*   **To know how the Sun, Earth and Moon are described as approximately spherical bodies**   * ***describe****the****Sun****,****Earth and Moon****as****approximately spherical bodies***   **To know the idea of the Earth’s rotation to explain day and night and the apparent movement of the sun across the sky**   * *the****Sun****moves around the****Earth****and causes****day and night****(the spinning****Earth****causes it). we do not always see the same side of the Moon. We do! The Moon revolves on its axis as it orbits the****Earth****so that the same side of the Moon always faces the****Earth****.* * *Lunar****eclipses****occur when Earth's shadow blocks the sun's light, which otherwise reflects off the moon. There are three types — total, partial and penumbral — with the most dramatic being a total lunar****eclipse****, in which Earth's shadow completely covers the moon.*   **To know the planets and their names and have a basic understanding of them.**   * *The order of the****planets****in the solar system, starting nearest the sun and working outward is the following: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune and then the possible****Planet****Nine. If you insist on including Pluto, it would come after Neptune on the list.*   **To know about space exploration and how the experiments have helped us on Earth (Communication)**   * *Some of the direct benefits of space exploration include an increase in the knowledge that is out there about space and the discovery of distant planets and galaxies* * *It helps us gain in insight into the beginnings of our universe*   **To know the work of astronauts in space – focus on Mae C Jemison (Aspiration)**   * *First black woman into Space* * *She orbited the Eath for nearly 80 days as a Mission Specialist*   **Refer back to the project question at the end of the unit:** | **Working Scientifically skills from progression document**  \* Use their Science experiences to explore ideas and raise different kinds of questions.  \* Talk about how Scientific ideas have developed over time.  \* Select and plan the most appropriate type of scientific enquiry to use to answer Scientific questions.  \* Choose the most appropriate equipment to make measurements with increasing precision and explain how to use it accurately. Take repeat measurements where appropriate.  \* Decide how to record data and results of increasing complexity from a choice of familiar approaches: scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.  \*Use their results to make predictions and identify when further observations, comparative and fair tests might be needed. | **Core vocabulary:**  **Tier 3**  Solar system  Spherical bodies  Eclipse  Orbit  **Tier 2**  movement  position  shadow  Revolves |
| **Curriculum threads to be covered:-**  **Reading**   * continuing to read and discuss an increasingly wide range of non-fiction and reference books or textbooks. * asking questions to improve their understanding. * retrieve, record and present information from non-fiction.   **Computing** –  **British Values –**   * **To encourage students to accept responsibility for their behaviour, show initiative, and to understand how they can contribute positively to the lives of those living and working in the locality of the school and to society more widely** *(grow in an element of awe and wonder, being more appreciate of the ‘Universe’ and understanding each of our own roles in ensuring the universe is protected and respected).*   **PSHE** - Living in the Wider World ˃Rules Rights and Responsibilities- CORAM Life Education- ***Fact or Opinion?*** (Year 5) | | |
| **Previous learning which will support the learning and skill development in this topic:**  Light: Year 3:  To know that light from the sun can be dangerous and we must protect our eyes  Forces and Magnets:  Year 3:  To know the how objects move on different surfaces.  To know that some forces need contact between two objects but magnetic forces can act at a distance.  EYFS-ELG 12 Shape, space and measures             ELG 14 The world | | |

****