

**Medium Term Plan 2023 / 2024**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Term** | **KS3 Autumn** | **Theme** | **Celebrations** | **Subject area** | **Science and Technology -***Science* |
| **INTENT****Learning Intentions** | **IMPLEMENTATION****Key Learning Activities*****.*** | **IMPACT** |
| ***Brief explanation of the learning outcomes, building a sequence of learning.*** | ***Ideas of how the outcomes will be achieved, including possible tasks, activities etc. developing Knowledge and Skills. Sequences should build on previous learning.*** | ***National Curriculum References.*** |
|  | **Explorer** | **Engager** | **Challenger** |  |
| Correctly classify some materials as liquid or solid.  | Students will explore different materials of solids and liquids and be able to classify each as solid or liquid.Easier starting point – work with ice and water before moving onto different solids or liquids. | Students will explore different materials of solids and liquids and identify similarities between solids and similarities between liquids.Students begin to build up known properties such as ‘solids can hold their own shape’. | Students will explore different materials and identify them as solids or liquids. Students should justify why they have categorised them as such; then use their justification to help them to classify items such as rice, sponge, as solids. | KS2 and KS3 NC.2D – Grouping and Changing Materials.3C – Characteristics of Materials.4D – Solids and Liquids. |
| Describe materials and objects using words such as hard, soft, rough, shiny etc. | Students will explore different materials and be able to categorise them into groups such as hard, soft, shiny, smoot, rough etc. | Students will explore different materials and objects and describe them using words such as hard, soft, shiny, smoot, rough etc.Students record their observations of materials in a table or in simple sentences. | Students will explore different materials and objects and describe them using words such as hard, soft, shiny, smoot, rough etc.Students record their observations of materials in a table or in simple sentences.Students are introduced to unfamiliar words such as sonorous, malleable, ductile etc. | 1C – Sorting and using materials.2D – Grouping and Changing Materials.2E – Forces and Movement. |
| Name several common materials and describe their properties. | Students could explore a collection of familiar materials or objects e.g. wood, metal, plastic, clay, sand. Talk about what the materials are like and name them. | Students could explore a collection of familiar materials or objects e.g. wood, metal, plastic, clay, sand. Talk about what the materials are like and name them.Students could go on a material hunt inside/outside the classroom and identify other objects made of the same material.Record results by drawing them with labels. | Students could go on a material hunt inside/outside the classroom and identify other objects made of the same material.Record results by drawing them with labels.Students could suggest reasons for using different materials for different objects due to the materials properties. | 1C – Sorting and using materials.2D – Grouping and Changing Materials.2E – Forces and Movement.Safety: Do not use any sharp objects. Young students should not handle glass objects, but could touch glass window. |
| Identify reasons for using materials for particular purposes. | Students look at objects around them and the materials they are made from. Students could discuss why they are made out of these materials and not others.E.g. Would paper make a good rain hat?Would you like a scarf made of this plastic bag?Students could investigate a material for a specific purpose. | Students look at objects around them and the materials they are made from. Students could discuss why they are made out of these materials and not others.Students could suggest ways to test which materials would be best for a specific purpose e.g. which materials would be best for wrapping presents? Which materials would be best for an umbrella? | Students look at objects around them and the materials they are made from. Students could discuss why they are made out of these materials and not others.Students could plan out a way to test which materials would be best for an umbrella?Plan out an equipment list and a method to test out next lesson. | 1C – Sorting and using materials.2D – Grouping and Changing Materials.2E – Forces and Movement.3C – Characteristics of materials.4C – Keeping Warm. |
| Practical Investigation – ‘Useless Umbrellas’. | Students recognise that an umbrella would need to be waterproof.Students suggest how to test whether materials are waterproof.Practical idea: place materials on the ground, add small amounts of water to them, then check if the ground underneath is dry. | Students recognise that an umbrella would need to be waterproof. Students are given a selection of different materials. Help students to decide how to test materials for suitability.Students test materials and record their results. | Students recognise that an umbrella would need to be waterproof. Students find a way to test the different materials e.g. holding the material over a container and dropping water onto it.Students should use their results to group materials into waterproof and not waterproof, and make suggestions of materials suitable for an umbrella. | 1C – Sorting and using materials.2D – Grouping and Changing Materials.2E – Forces and Movement.3C – Characteristics of materials.4C – Keeping Warm. |
| Recognise that some materials occur naturally and that some are man-made. | Students investigate different materials such as twigs, sand, rocks, water, glass, plastic, nylon and work together to identify which are natural and which are manmade. Students could go outside to find natural and man-made materials. | Students investigate different materials to identify which are natural and which are man-made. Students look carefully at objects noticing how some objects are natural but have been altered by man e.g. woollen jersey, wooden ruler or chair. | Students investigate different materials to identify which are natural and which are man-made. Students look carefully at objects noticing how some objects are natural but have been altered by man e.g. woollen jersey, wooden ruler or chair.Students use simple secondary sources to find out how some materials are made. E.g. glass. | 1C – Sorting and using materials.2D – Grouping and Changing Materials.2E – Forces and Movement.3C – Characteristics of materials.Safety: If using, sheep’s wool must be washed before use, and bones must be sterilised. Young students should not handle glass objects, but could touch glass windows. |
| Recognise that some materials’ properties change if they are heated or cooled. | Students investigate how materials’ properties change if they are heated or cooled.Suggested materials: playdoh, plasticine, ice/water.  | Students investigate how materials’ properties change if they are heated or cooled.Suggested materials: playdoh, plasticine, ice/water. Students could look at the expansion of water when frozen (freeze a bottle of water with the lid on loosely) and could look at placing ice in warmer areas of the classroom.Students record their observations. | Students investigate how materials’ properties change if they are heated or cooled.Suggested materials: playdoh, plasticine, ice/water. Students could look at materials such a bread/toast, raw egg/fried egg, or dry ingredients and cooked biscuits. Students explain the properties of the new materials and that they are often useful.Students record their observations. | 1C – Sorting and using materials.2D – Grouping and Changing Materials.2E – Forces and Movement.3C – Characteristics of materials.6D – Reversible and Irreversible Changes.Safety: Cooking activities must follow all food hygiene health and safety regulations.Students should not touch ice immediately after it is taken out of the freezer. |
| Recognise that there are renewable energies – Wind Power | Students look at how energy is needed to power things e.g. a battery to power a simple circuit.Students look at how energy can be created by the wind.Suggested activity: Wind turbines to power simple circuits. Creating small windmills. | Students look at how energy is needed to power things e.g. a battery to power a simple circuit.Students look at how energy can be created by the wind. Students could visit a local turbine e.g. Pimbo industrial estate or use secondary sources to see how wind generates electricity.Suggested activity: Wind turbines to power simple circuits. Creating small windmills. | Students look at how energy is needed to power things e.g. a battery to power a simple circuit.Students look at how energy can be created by the wind. Students could visit a local turbine e.g. Pimbo industrial estate or use secondary sources to see how wind generates electricity.Suggested activity: Using the ‘renewable energy’ equipment. Students use wind power to create a current and measure the amount of power created at different windy areas of the school. | 2F – Using Electricity4F – Circuits and Conductors5/6H – Enquiry in Environmental and Technological Contexts.6G – Changing Circuits. |
| Recognise that there are renewable energies – Water Power | Students look at how energy is needed to power things e.g. a battery to power a simple circuit.Students look at how energy can be created by water.Suggested activity: Water turbines to power simple circuits. Creating small water wheels. | Students look at how energy is needed to power things e.g. a battery to power a simple circuit.Students look at how energy can be created by water. Students could use a secondary source to look at a working water wheel e.g. Laxey Wheel, Isle of Man.Suggested activity: Water turbines to power simple circuits. Creating small water wheels. | Students look at how energy can be created by the water. Students could use a secondary source to look at a working water wheel e.g. Laxey Wheel, Isle of Man.Suggested activity: Using the ‘renewable energy’ equipment. Students use water power to create a current and measure the amount of power created by varying water flows. | 2F – Using Electricity4F – Circuits and Conductors5/6H – Enquiry in Environmental and Technological Contexts.6G – Changing Circuits. |
| Recognise that there are renewable energies – Solar Power | Students look at how energy is needed to power things e.g. a battery to power a simple circuit.Students look at how energy can be created by the Sun.Suggested activity: Solar panels to power simple circuits. Creating small white and black tiles and measuring the temperature difference between them through simple touch. | Students look at how energy is needed to power things e.g. a battery to power a simple circuit.Students look at how energy can be created by the Sun. Students could use a secondary source to look at a working solar panels, or use solar panels on calculators.Suggested activity: Solar panels to power simple circuits. Investigation of black and white cans on temperature change. | Students look at how energy is needed to power things e.g. a battery to power a simple circuit.Students look at how energy can be created by the Sun. Students could use a secondary source to look at a working solar panels, or use solar panels on calculators.Suggested activity: Solar panels to power simple circuits. Investigation of black and white cans on temperature change. | 2F – Using Electricity4F – Circuits and Conductors5/6H – Enquiry in Environmental and Technological Contexts.6G – Changing Circuits. |
| Look at how the Earth’s resources are running out and why there is an importance in renewable energies. | Students learn the Earth’s 6 natural resources categories. What would happen if these ran out? Look at the importance of moving to renewable energies before the resources run out.Suggested activity: thinking about which items use electricity. Use an energy meter to show how much power they use. Can students switch off items to lower the reading on the energy meter? | Students learn the Earth’s 6 natural resources categories. What would happen if these ran out? Look at the importance of moving to renewable energies before the resources run out. Students look at the predicted ‘years left’ of coal, oil and gas, and how much of the UK’s energy is supplied by them.Stress the importance of not wasting electricity and energy.Suggested activity: thinking about which items use electricity. Use an energy meter to show how much power they use. Can students switch off items to lower the reading on the energy meter? | Students learn the Earth’s 6 natural resources categories. What would happen if these ran out? Look at the importance of moving to renewable energies before the resources run out. Students look at the predicted ‘years left’ of coal, oil and gas, and how much of the UK’s energy is supplied by them.Stress the importance of not wasting electricity and energy.Suggested activity: thinking about which items use electricity. Use an energy meter to show how much power they use. Can students switch off items to lower the reading on the energy meter? Create a chart to show which items use the most electricity and can they be made more efficient? | 2B – Plants, Animals and Local Environment.4B – Habitats.5/6H – Enquiry in Environmental and Technological Contexts. |
| Look at how the Earth’s recourses are running out and why there is an importance in recycling.Links with ‘Energy Saving Week’ 17th – 23rd January 2024. | Students look at ways to save energy by switching off unused items, stopping waste of electricity, and recycling items to save on the energy of making them.Students look at which items can be recycled.Students create a poster about recycling and reducing the waste of energy. | Students look at ways to save energy by switching off unused items, stopping waste of electricity, and recycling items to save on the energy of making them.Students look at which items can be recycled.Students create a leaflet to take home explaining the importance of reducing energy waste and recycling. – could be linked to wrapping paper and festival waste. | Students look at ways to save energy by switching off unused items, stopping waste of electricity, and recycling items to save on the energy of making them.Students create posters and information sheets to be displayed around school, to help remind people to reduce waste of electricity and to recycle more. | 2B – Plants, Animals and Local Environment.4B – Habitats.5/6H – Enquiry in Environmental and Technological Contexts. |
| **Key Resources** | **Classroom Resources****Screen, visualiser.****Science specific equipment.** |