Theme Overview

Year	5	Term	Autumn Term 1
Theme	Scientific Changes	Big Question	What scientific changes can be reversed?

Focus of unit and scope of unit:

Pupils should build a more systematic understanding of materials by exploring and comparing the properties of a broad range of materials, including relating these to what they learnt about magnetism in year 3 and about electricity in year 4. They should explore reversible changes, including, evaporating, filtering, sieving, melting and dissolving, recognising that melting and dissolving are different processes. Pupils should explore changes that are difficult to reverse They should find out about how chemists create new materials, Ruth Benerito, who invented wrinkle-free cotton. They will use their knowledge of reversible and irreversible changes and develop their cooking skills to develop, refine and evaluate their own pickle to meet their own success criteria, as well as learning about seasonal produce and healthy eating.

Caring	Creative	Critical	SMSC/Equalities/British Values
This unit teaches children about the importance of using seasonal produce and food preservation to reduce food waste and promote sustainability. Both the Science and DT aspects encourages children to work together to solve problems and find information.	The unit allows children to develop creative ways to show their scientific thinking through developing their own models. It gives children the chance to research and create their own recipes and process to meet their own criteria.	Throughout the unit the children are encouraged to think critically by making science observations and evaluating information on chutney and how they could be improved. They are challenged to draw conclusions from observations and results and refine and improve their scientific enquiry skills**.**	The unit works together to create a product in groups, giving children the chance to explore important social skills and respecting other people's opinions and ideas across science and Design Technology. The children study a female chemist who was encouraged into the profession, despite it being a time when this would have been quite unpopular and discuss the importance of equality for invention and design.

Big Start	Big Finish	Experience
Fun science investigations	Science Fair and Pickle/Preserve tasting	Church/ Cathedral Visit linked to RE

Science

<table>
<tr><td>Year 5</td><td colspan="3">Autmn Term 1: What scientific changes can be reversed?</td></tr>
<tr><td rowspan="2">Sequence of Learning</td><td colspan="2">Previous Learning</td><td>Next Steps in Learning</td></tr>
<tr><td colspan="2">Previously the children have learnt about solids, liquids and gases and freezing points and boiling points. They have observed reversible changes and made careful observations.
Children have begun to take simple measurements and record these.</td><td>Children will move onto using their scientific knowledge to make predictions and to help them draw conclusions.
They will understand how to carry out an investigation more independently and decide what to measure and what to change.</td></tr>
<tr><td rowspan="4">Knowledge and Skills</td><td>Planning an Investigation</td><td>Carrying Out an Investigation</td><td>Presenting Evidence and Drawing Conclusions</td></tr>
<tr><td>I ask relevant questions (containing scientific knowledge and understanding) and with help I recognise which type of enquiry is best to answer a question.
I decide what observations and measurements to make (controlling variables with help where necessary) and what equipment to use to make my measurements and observations.</td><td>use a range of equipment independently to make a series of observations and measurements I take are adequate for the task.
I use information sources provided to find things out.
I identify possible risks to myself and others with support.
I gather and record non-complex results (data and observations) using e.g. tables and scientific diagrams that I can independently construct.</td><td>I present the results (data and observations) in a range of formats e.g. bar and line graphs, simple scatter graphs, keys and frequency charts.
I draw conclusions from my data and observations.
I begin to use basic scientific evidence to support or refute the ideas or arguments for my conclusion.
I can use simple scientific models to present my thinking.</td></tr>
<tr><td colspan="2">Substantive Knowledge</td><td>Famous Scientists</td></tr>
<tr><td colspan="2">Properties and changes of materials
Compare and group materials based on their properties (e.g. hardness, solubility, transparency, conductivity, [electrical & thermal], and response to magnets).
Know how a material dissolves to form a solution, explaining the process of dissolving.
Know and show how to recover a substance from a solution.
Know how some materials can be separated.
Demonstrate how materials can be separated (e.g. through filtering, sieving and evaporating).
Know and can demonstrate that some changes are reversible, and some are not.
Know how some changes result in the formation of a new material and this is usually irreversible.
Know about reversible and irreversible changes.
Give evidenced reasons why materials should be used for specific purposes.</td><td></td></tr>
<tr><td>Vocabulary</td><td>Rigid
Flexible
Thermal conductor: material that allows heat to pass through it.</td><td>Reversible/physical change: one that can be undone.
Irreversible/chemical change: one that cannot be undone.</td><td>Dissolve: when a solid mixes with liquid to make a solution.
Evaporate: heat liquid until it turns into gas.
Mixture: two or more substances that can be separated.</td></tr>
</table>

	Thermal Insulator **Solution:** mixture of solid and liquid (you might not be able to see the solid).	**Soluble:** when something can dissolve. **Insoluble:** when something can't dissolve. **Filter:** use porous material to separate solid and liquid.

Design Technology: Preserve/Chutney

<table>
<tr><td>Year 5</td><td colspan="3">Autumn Term 1</td></tr>
<tr><td rowspan="2">Sequence of Learning</td><td colspan="2">Previous Learning</td><td>Next Steps in Learning</td></tr>
<tr><td colspan="2">Children have previously prepared a simple hot meal using simple chopping skills. They have previously used a toaster and microwave and will not move onto using other heating methods. Children have previously chopped simple foods and will now move onto cutting harder food.</td><td>Children will move onto designing and making food to meet a criteria. They will develop their knowledge of heating methods and make a healthy meal applying all the skills learnt in previous years.</td></tr>
<tr><td rowspan="4">Knowledge and Skills</td><td>Design</td><td>Make</td><td>Evaluate</td></tr>
<tr><td>• Design
• Come up with a range of ideas after collecting information from different sources.
• Produce a detailed, step-by-step plan which could include: step by step instructions, cross sectional diagram, prototypes.
• Suggest alternative plans; outlining the positive features and draw backs.
• Explain how a product will appeal to a specific audience and criteria.</td><td>• Make
• Use a range of tools and equipment competently.
• Make a prototype before making a final version</td><td>• Evaluate
• Evaluate appearance and function against original criteria.
• Suggest improvements that could be made, considering material and methods.</td></tr>
<tr><td colspan="2">Cooking & Nutrition / Construction & Structures / Textiles / Mechanisms</td><td>Famous Designers</td></tr>
<tr><td colspan="2">• <u>Make a preserve-pickle 2024: chutney, make the pickling vinegar using the class hob.</u>

• Know the different nutrients that are important to health and which foods contain these.
• Show that I can be both hygienic and safe in the kitchen.
• Know where different foods come from and how they may be changed to help preserve or make them safer or tastier.
• Understand seasonality and know how a variety of ingredients are grown, reared, caught and processed to make them safe and palatable/tasty to eat.

• with support finely grate hard foods(zesting, parmesan)
• with support use a can opener,ring pull
• dice foods and cut them into evenly sized fine pieces(with moderate support)
• confidently use the claw grip to cut harder foods using a serrated vegetable knife</td><td>Famous Person: Nicolas Appert French - chef who invented air tight food preservation</td></tr>
</table>

	• peel harder food using a peeler (apple,potato) • Confidently use a microwave/ hob • With supervision use a food processor or electric blender to mash,blend puree hard ingredients	
Vocabulary	Seasonal foods Zesting Dice	Vegetable peeler puree