

Our Intent is: To develop inquisitive children who are excited about investigating with curiosity, "How can scientific enquiry explain the world?" Exploring answers by gathering and analysing evidence.



Forton Primary School
Science

Pendle Class
Autumn 1
Year B

Etymology - evaporation – from Latin evaporare means 'disperse in vapour or steam.'

The Whale Who Ate Plastic
By
Stephanie O'Connor

Key Concept: Properties of Materials

Key Question: Is global warming reversible or irreversible?

N.C. LINKS:

Properties of Materials Pupils should be taught to:

- compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets
- know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution
- use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating
- give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic

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	<ul style="list-style-type: none"> • demonstrate that dissolving, mixing and changes of state are reversible changes • explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda. 	
<p style="text-align: center;">Unit Overview:</p> <p>Compare and group everyday materials on basis of their properties, hardness, solubility, transparency, conductivity and response to magnets</p> <p>Explore and explain the role of solids, liquids, gases.</p> <p>Making a solution and identifying reversible and irreversible changes.</p> <p>Use knowledge of solids, liquids and gases to decide how mixtures might be separated through filtering, sieving and evaporating.</p> <p>Give reasons based on evidence from comparative and fair tests, for the use of everyday materials.</p>	<p>Vocabulary:</p>	
	<p>Subject Specific:</p> <p>Solids Liquids Gases Melting Freezing Evaporating Reversible changes Solubility Conductor Dissolve Solution Separate Filtering Conductivity Insulation Irreversible changes</p>	<p>Working Scientifically:</p> <p>Plan Variables</p> <p>Measurements Accuracy</p> <p>Precision Repeat reading</p> <p>Labels Classification</p>

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		Scatter Key graphs Predictions Bar graphs Line graphs Patterns Quantitative Interpret Measurements Systematic
New Knowledge Progression: <ul style="list-style-type: none">• That some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution.• Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating.• Demonstrate that dissolving, mixing and changes of state are reversible changes.• Changes can occur when different materials are mixed.• Some material changes can be reversed and some cannot.	Building on Prior learning when B follows A: <ul style="list-style-type: none">• Recognise that living things can be grouped in a variety of ways.• Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment.• Recognise that environments can change and that this can sometimes pose dangers to living things.• Use and make identification keys for plants and animals.	

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- Recognise that dissolving is a reversible change and recognise everyday situations where dissolving occurs.
- Distinguish between melting and dissolving.
- Mixtures of solids (of different particle size) can be separated by sieving.
- Mixtures of solids and liquids can be separated by filtering if the solid is insoluble (un-dissolved).
- Evaporation helps us separate soluble materials from water.
- Changes to materials can happen at different rates (factors affecting dissolving, factors affecting evaporation – amount of liquid, temperature, wind speed, etc).
- Freezing, melting and boiling changes can be reversed.
- Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning, and the action of acid on bicarbonate of soda (producing a gas / fizzing).

Key Skills (Disciplinary)

- Carry out fair tests and other investigations with increasing independence.

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- Suggest more than one possible prediction and begin to suggest which is the most likely. Justify their reason with some knowledge and understanding of the scientific concept.
- Make decisions about which variables to change, measure and keep the same.
- Make most of the planning decisions for an investigation.
- Recognise when it is appropriate to carry out a fair test.
- Make their own decisions about what observations to make or measurements to use and how long to take them for (recognising the need for repeat readings on some occasions).
- Take measurements using a range of scientific equipment with increasing accuracy and using more complex scales / units.
- Identify possible risks to themselves and others and suggest ways of reducing these.
- Choose the most appropriate equipment and make accurate measurements.
- Use their developing scientific knowledge and understanding and relevant scientific language and terminology to communicate more abstract concepts.
- Present and explain their findings through talk, in written forms or in other ways (e.g. using technology) for a range of audiences / purposes.
- Record data and results of increasing complexity using different formats e.g. tables, annotated scientific diagrams, classification keys, graphs and models.
- Comment on the results and whether they support the initial prediction.
- Use their scientific knowledge and understanding and appropriate scientific language and terminology to explain their findings and data and answer their initial question.
- Begin to recognise how repeated readings improve the reliability of results.
- Compare results with others and comment on how reliable they are.
- Predict what a graph might look like before collecting results.

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- Identify variables to change, measure and keep the same in order for a test to be fair.
- Decide whether to repeat any readings and justify the reason for doing so.
- Make their own decisions about what measurements to take (and begin to identify the ranges used).
- Use equipment fit for purpose to take measurements which are increasingly accurate and precise.
- Articulate understanding of the concept using scientific language and terminology when describing abstract ideas, observations and findings.
- Spot unexpected results that do not fit the pattern (anomalies).
- Independently form a conclusion which draws on the evidence from the test.
- Use scientific language and terminology to explain why something happened.
- Be able to suggest reasons for unexpected results

Sequence of Lessons:

1. To compare and group together everyday materials on the basis of their properties. (Hardness, transparency and response to magnets).
2. To explore the terms solids, liquids and gases.
3. To investigate what happens reversible and irreversible changes are made to a material.
4. To investigate the suitability of everyday materials as thermal conductors and insulators.
5. To describe how to recover a substance from a solution by separating different mixtures.
6. To identify and observe irreversible chemical changes.

Enhancements:

Forton Science Lab.

- Elastic bands
- Sports balls

End of Unit Outcome:

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- Stretchy materials
- The strongest paper
- Carrier bag wars
- The scratch test

Write an argument in response to the question, 'is global warming reversible or irreversible?' ready to deliver as part of our science lab day.

Oral Assessments:

Can you group together everyday materials on the basis of their properties? (Hardness, transparency and response to magnets)

Can you explain the terms solids, liquids and gases?

What happens when reversible and irreversible changes are made to a material?

Which everyday materials are the best as thermal conductors and insulators?

How can you recover a substance from a solution by separating different mixtures?