


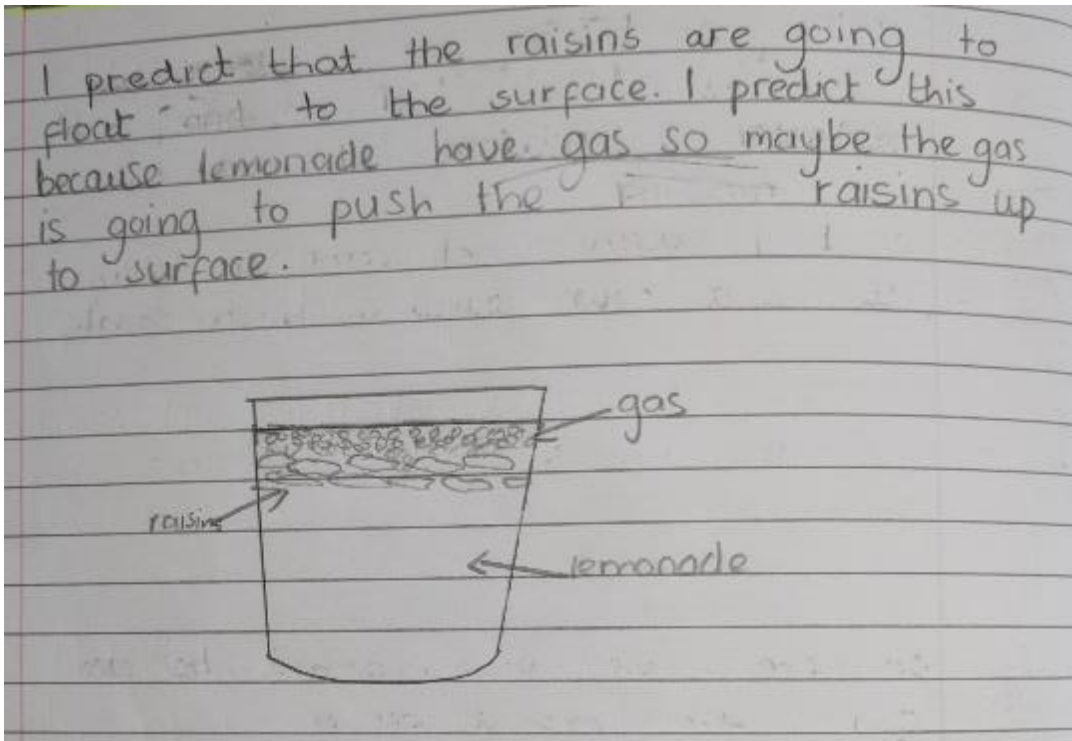



Examples of Work

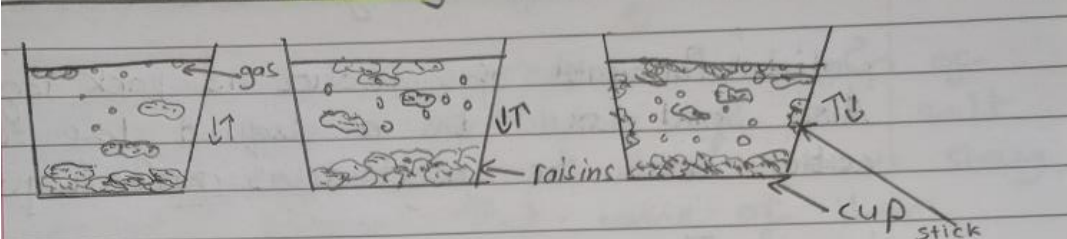
Melissa


Properties and changes of materials - Year 5

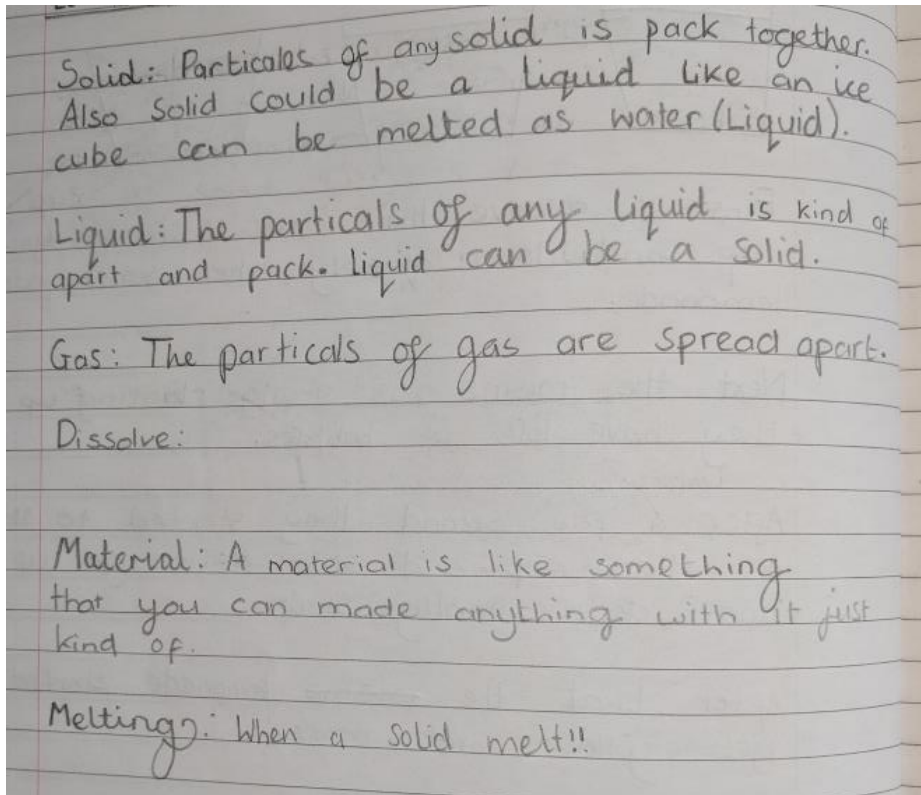
	Year	5	Topic	Properties and changes of materials
	Focus of assessment (National Curriculum statements)			
	<ul style="list-style-type: none">• Compare and group materials together, according to whether they are solids, liquids or gases. (Year 4 – States of matter)			
	Description of activity			
	The pupils were given some raisins to handle and then shown a bottle of lemonade and asked to think what might happen when the raisins are added to the lemonade.			


EVIDENCE OF LEARNING		ASSESSMENT
Oral evidence	Examples of work	Knowledge
		Melissa uses the word 'gas' in her prediction.
Teacher observations		Working scientifically

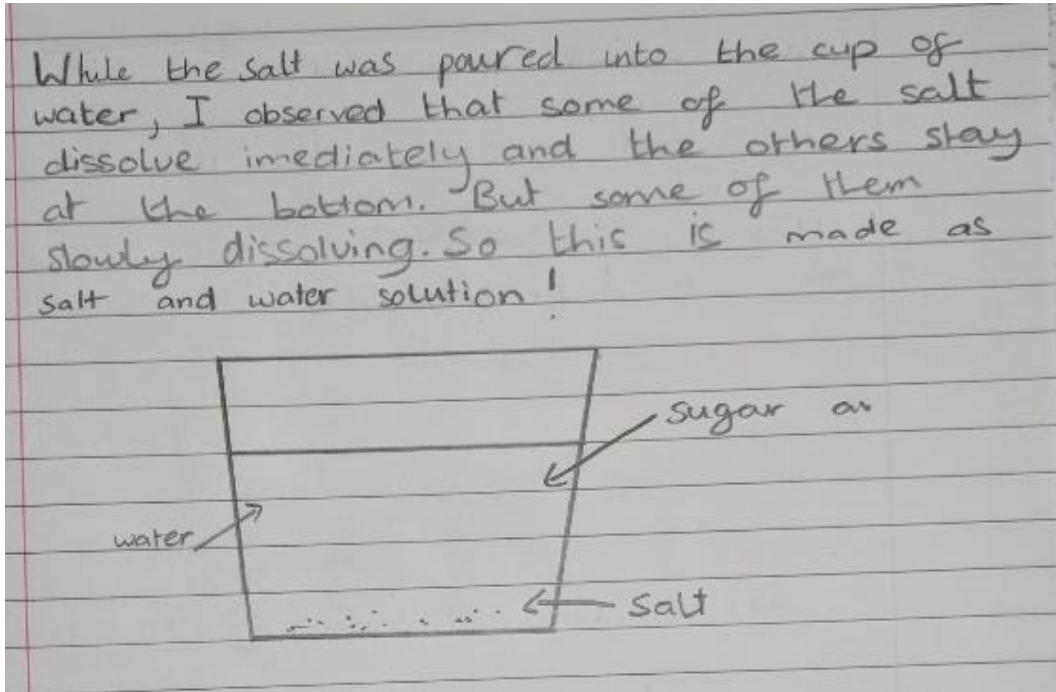
	Year	5	Topic	Properties and changes of materials
	Focus of assessment (National Curriculum statements)			
	<ul style="list-style-type: none"> Compare and group materials together, according to whether they are solids, liquids or gases. (Year 4 – States of matter) 			
	Description of activity			
	The pupils made close observations of adding raisins to lemonade.			


EVIDENCE OF LEARNING		ASSESSMENT
Oral evidence	Examples of work	Knowledge
	 <p>First I observe that some of raisins going up and down quickly when Sarah pours the lemonade.</p>	
Teacher observations	<p>Next the raisins was slowly floating up when they have lots of bubbles.</p> <p>After a few second they started to stick on the cup and started to go up and down really slow.</p>	<p>Working scientifically</p> <p>Melissa has made a close observation and has noticed the effect the bubbles have on how quickly the raisins float.</p>

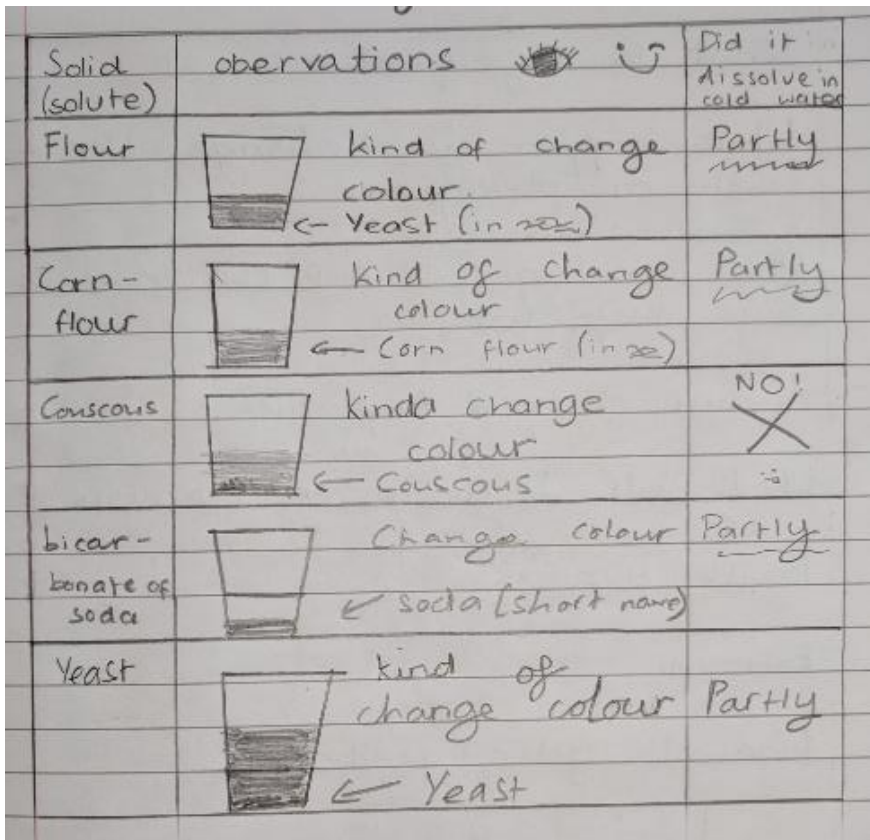
	Year	5	Topic	Properties and changes of materials
	Focus of assessment (National Curriculum statements)			
	<ul style="list-style-type: none">• Compare and group materials together, according to whether they are solids, liquids or gases. (Year 4 – States of matter)• Know that some materials will dissolve in liquid to form a solution and describe how to recover a substance from a solution.			
	Description of activity			
	The pupils were given the key words for the topic on cards. They sorted these with their partner into words they had heard before and new words. Starting with the words they felt most familiar with, they were asked to write definitions for each word.			


EVIDENCE OF LEARNING		ASSESSMENT
Oral evidence	Examples of work	Knowledge
		Melissa is familiar with the words 'dissolve' and 'melt', but is struggling to write clear definitions for these words.
Teacher observations		Working scientifically


	Year	5	Topic	Properties and changes of materials
	Focus of assessment (National Curriculum statements)			
	<ul style="list-style-type: none">Know that some materials will dissolve in liquid to form a solution and describe how to recover a substance from a solution.			
	Description of activity			
	The pupils were asked to add some salt to water and observe it closely. During the discussion that followed, the teacher ensured that the pupils understood that the salt had not disappeared but had dissolved and was still in the cup. She also explained that the salt and water had now become a solution.			


EVIDENCE OF LEARNING		ASSESSMENT
Oral evidence	Examples of work	Knowledge
		<p>Melissa shows an awareness that a solid can dissolve in water. She has used the word 'solution' in her explanation. This is not sufficient evidence to show that she is secure with the concept of dissolving yet.</p>
Teacher observations		Working scientifically
		<p>Melissa makes good observations and includes the words 'dissolve' and 'solution' in her description.</p>

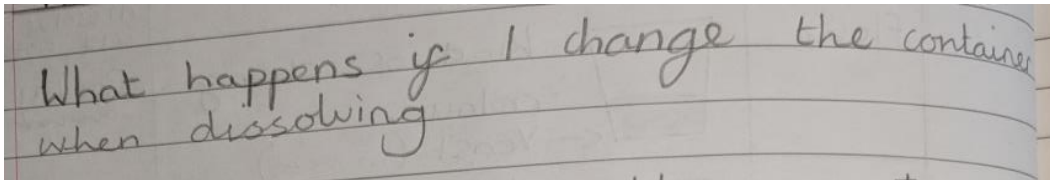
	Year	5	Topic	Properties and changes of materials
	Focus of assessment (National Curriculum statements)			
	<ul style="list-style-type: none"> Know that some materials will dissolve in liquid to form a solution and describe how to recover a substance from a solution. 			
	Description of activity			
	The pupils could select solids of their choice from a range provided. They were then asked to add them to water and make careful observations, choosing how to record these observations.			


EVIDENCE OF LEARNING		ASSESSMENT
Oral evidence	Examples of work	Knowledge
<p>Teacher: "Why have you said they partly dissolved?"</p> <p>Melissa: "Because there was less at the bottom than what I put it in, so some must have dissolved."</p>		<p>Melissa is not familiar with suspensions at present which is causing her confusion.</p>
Teacher observations		Working scientifically
		<p>Melissa chose to draw a table to record her observations. She independently added a column to indicate whether the solid dissolved or not.</p>


	Year	5	Topic	Properties and changes of materials
	Focus of assessment (National Curriculum statements)			
	<ul style="list-style-type: none"> Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution. 			
	Description of activity			
	<p>The pupils were given two cups of flour in water and asked to stir them both up. They made close observations. One they continued to stir and the other they left. They continued to make observations. The teacher then introduced the word 'suspension' and explained that the solid has not dissolved.</p>			


EVIDENCE OF LEARNING		ASSESSMENT
Oral evidence	Examples of work	Knowledge
<p>Melissa: "When you stir it, all the little bits of flour float around in the liquid and make it look more white."</p> <p>"When you stop stirring, you can see them falling to the bottom and the water gets clearer. You can see some bits of flour stuck to the side of the cups."</p> <p>Teacher: "What do you think about the cornflour now?"</p> <p>Melissa: "It was like the flour. It did not dissolve to make a solution but made a suspension."</p>		<p>Melissa is now clear about the difference between a solution and a suspension.</p>
Teacher observations		Working scientifically

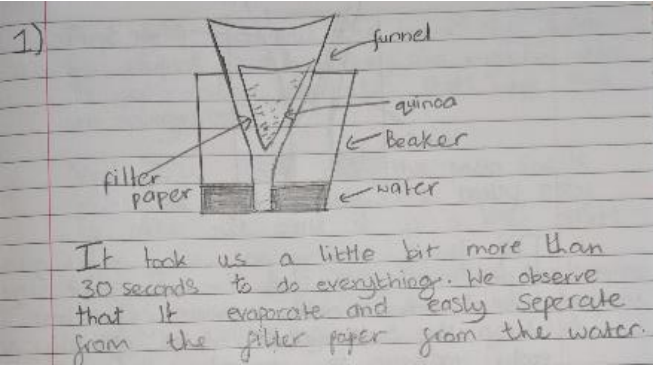
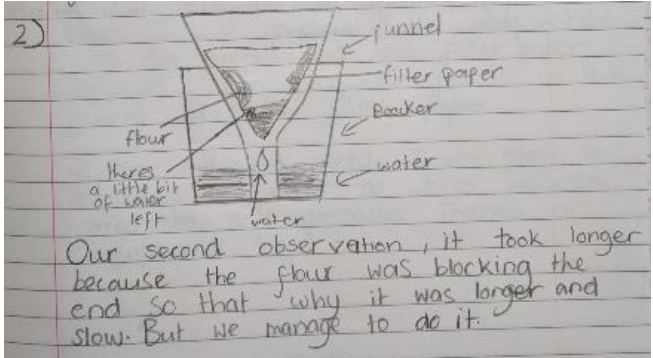
	Year	5	Topic	Properties and changes of materials
	Focus of assessment (National Curriculum statements)			
	<ul style="list-style-type: none"> Know that some materials will dissolve in liquid to form a solution and describe how to recover a substance from a solution. 			
	Description of activity			
	<p>The pupils were asked to discuss in small groups and write down what they could change that may affect the speed of sugar dissolving. Using these ideas and the fair test planning board, each group chose their own investigation. Melissa's group chose to investigate how the type of container affected the rate of dissolving. Each group was then given time to complete their chosen investigation and asked to interpret their results.</p>			


EVIDENCE OF LEARNING		ASSESSMENT
Oral evidence	Examples of work	Knowledge
<p>"We put the same amount of water and sugar in each container and waited to see which dissolved first. Not all the sugar dissolved in any of them, so we tried stirring. This helped the sugar to dissolve more quickly. We couldn't stir the cylinder 'cos the spoon didn't fit, so we moved it about. That helped a bit but not as good as stirring. I think the stirring made more difference than the container."</p>		<p>Melissa talks confidently about the sugar dissolving and understands that there are variables that affect the rate of dissolving.</p>
Teacher observations		Working scientifically
		<p>Melissa carries out the investigation controlling variables appropriately, before going on to explore the effect of stirring.</p>

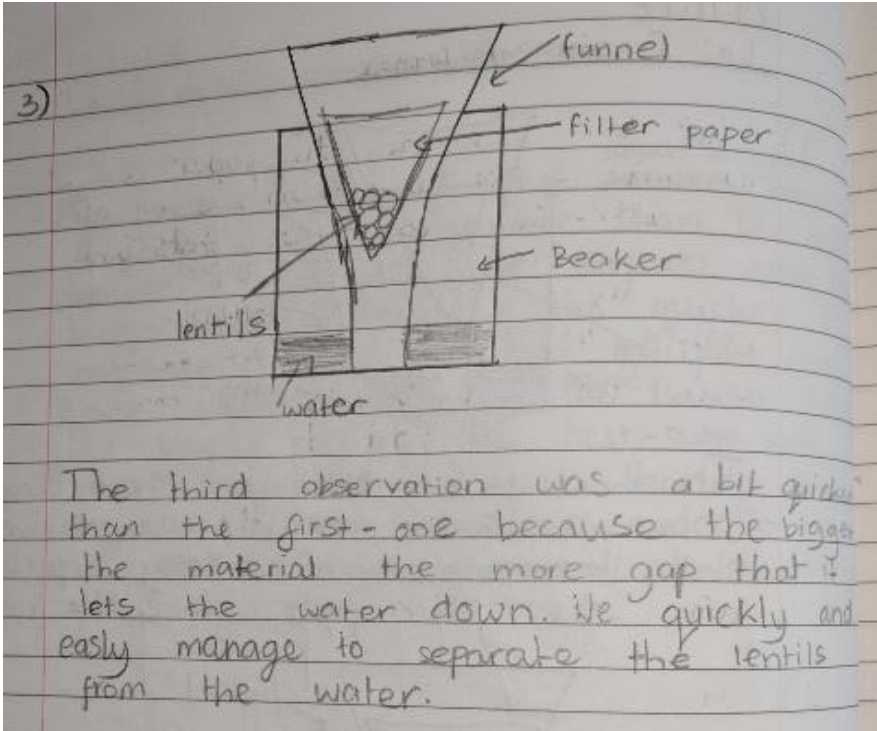
	Year	5	Topic	Properties and changes of materials
	Focus of assessment (National Curriculum statements)			
	<ul style="list-style-type: none">Know that some materials will dissolve in liquid to form a solution and describe how to recover a substance from a solution.			
	Description of activity			
	The pupils placed sugar coated sweets into shallow water and observed the change over time.			


EVIDENCE OF LEARNING		ASSESSMENT
Oral evidence	Examples of work	Knowledge
<p>"The colour from the sweets spreads out into the water. The chocolate is covered in a shell made of coloured sugar. This dissolves in the water to form a solution. When you turn the sweet over, it looks like an eye. There is a bit of the outside left as it was on the bottom of the tray and the water couldn't get to it to dissolve it."</p>		<p>Melissa applies her understanding of dissolving to this new situation and explains it using the expected key vocabulary.</p>
Teacher observations		Working scientifically
		<p>Melissa communicates detailed observations orally and uses correct scientific language to describe what is happening.</p>

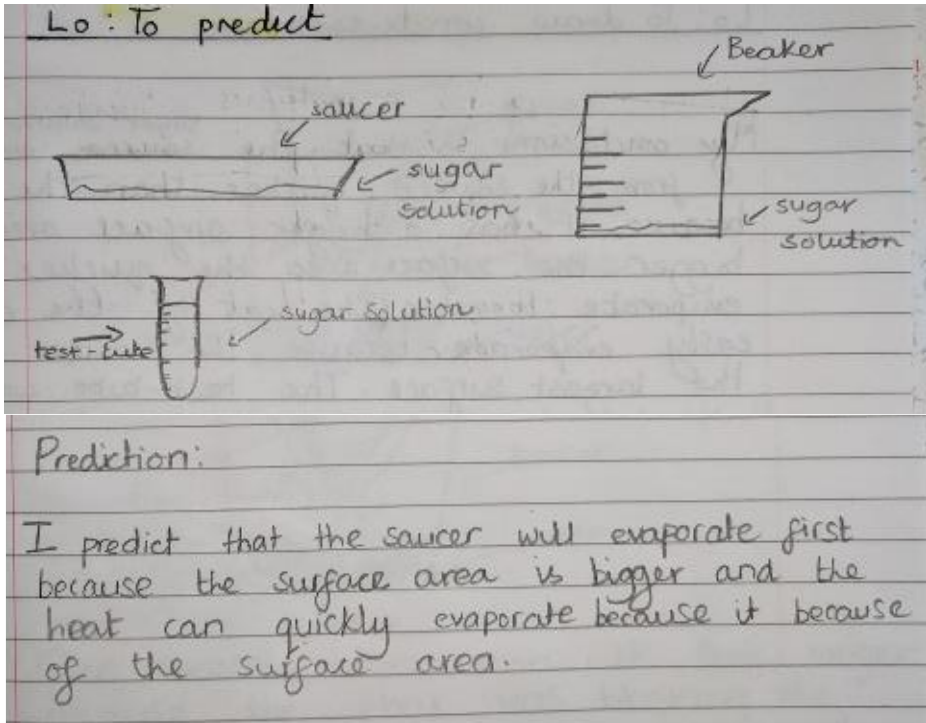
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	Focus of assessment (National Curriculum statements)			
	<ul style="list-style-type: none">• Know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution.• Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating.			
	Description of activity			
	The pupils were shown how to filter by folding the paper correctly, placing it in the funnel and carefully pouring water through it so that it did not go over the sides of the filter paper. They were then asked to make a mixture of three different solids in water and to see what happened when they filtered these.			


EVIDENCE OF LEARNING		ASSESSMENT
Oral evidence	Examples of work	Knowledge
		
Teacher observations		
		Working scientifically

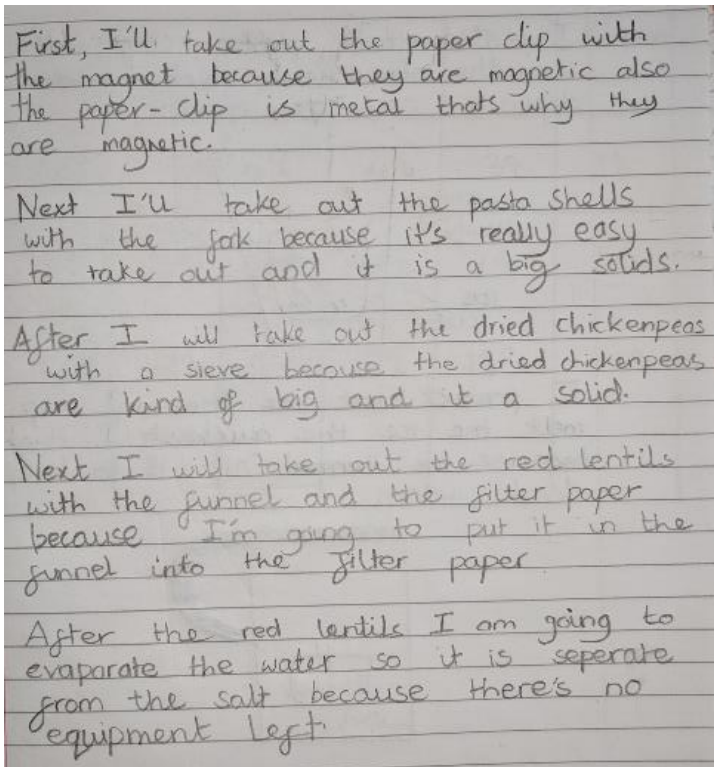
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EVIDENCE OF LEARNING		ASSESSMENT
Oral evidence	Examples of work	Knowledge
		Working scientifically
Teacher observations		Melissa makes careful observations and suggests reasons for the differences.

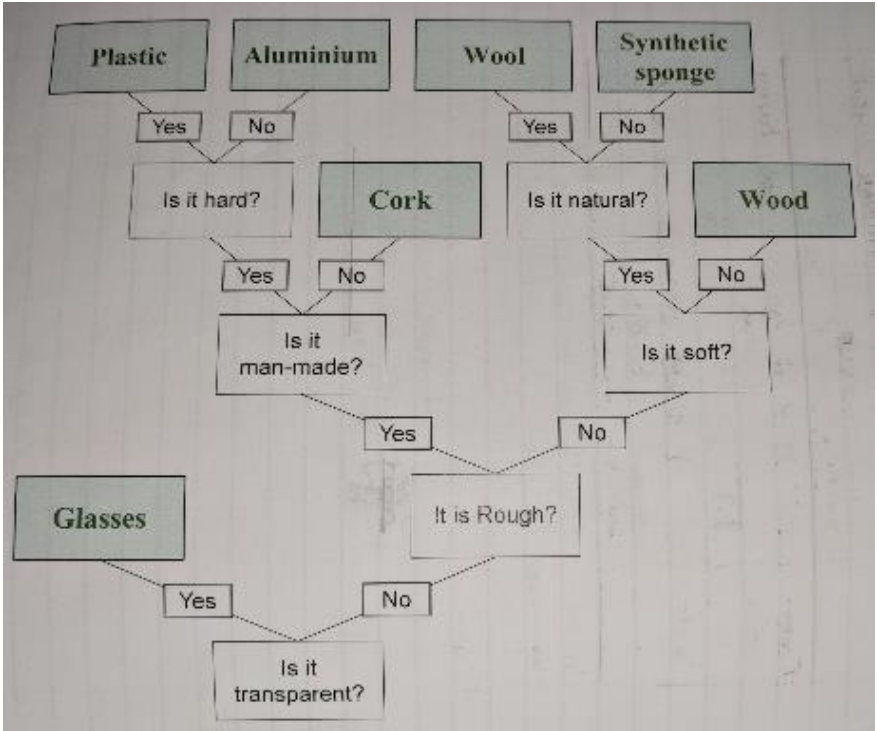
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	Description of activity			
	The teacher first recapped on their prior learning about evaporation in Year 4. Then the pupils were given a sugar solution and asked to think about what variables affect the speed of evaporation. They were then asked to make a prediction for one of these variables using their understanding of evaporation.			


EVIDENCE OF LEARNING		ASSESSMENT
Oral evidence	Examples of work	Knowledge
		<p>This shows that she has the required knowledge about evaporation from Year 4 and is able to apply this to separating mixtures.</p>
Teacher observations		Working scientifically
Melissa's group chose to put the same amount of the solution into different types of containers.		Melissa decides how to carry out the investigation and makes a prediction based on her prior knowledge.

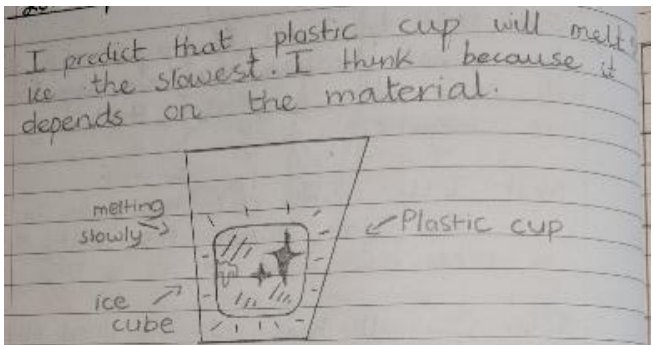
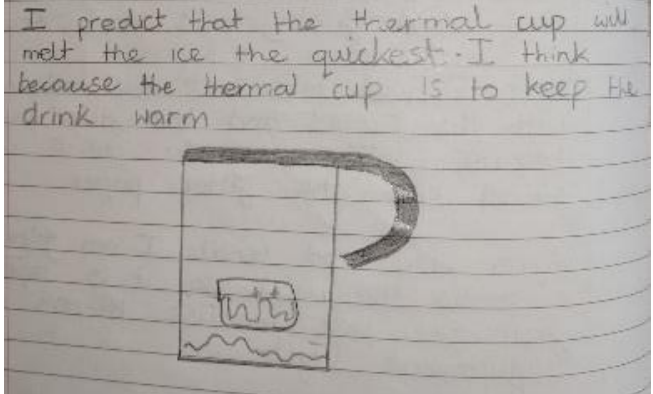
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	Description of activity			
	The pupils were given a mixture of pasta shells, paperclips, chickpeas, lentils and salt in water and a range of equipment to use. They were asked to plan how they would separate the mixture.			


EVIDENCE OF LEARNING		ASSESSMENT
Oral evidence	Examples of work	Knowledge
Teacher observations The first paragraph shows a possible misconception that all metals are magnetic.		Melissa uses her knowledge to successfully separate the given mixture and explains her method using all the expected vocabulary correctly.
		Working scientifically

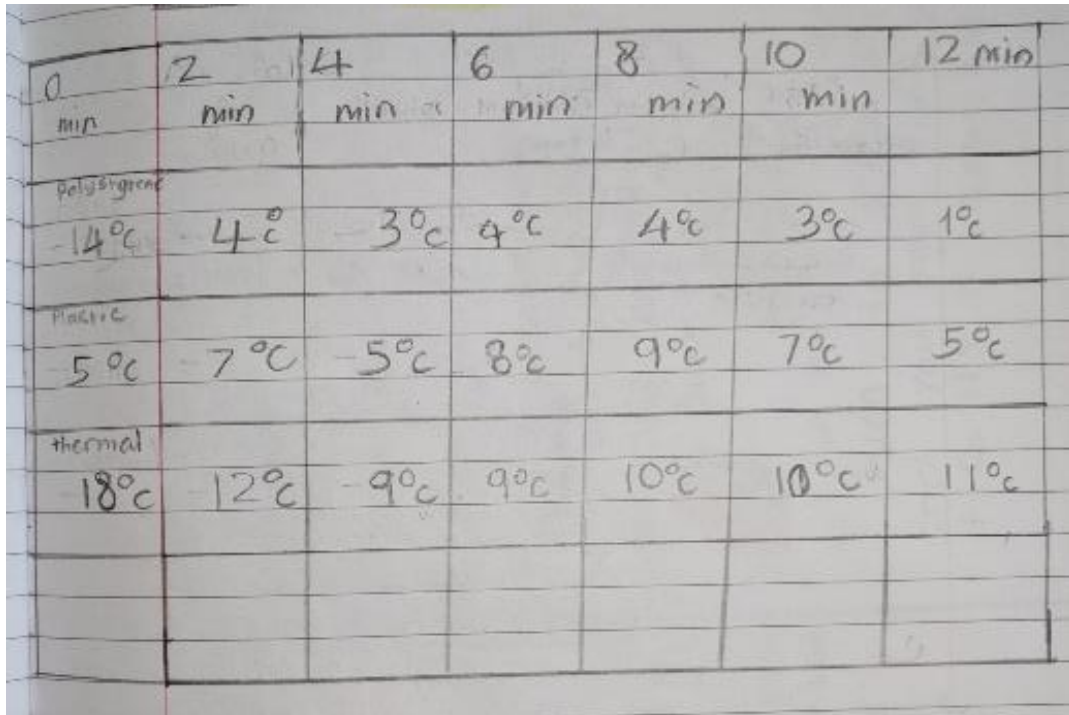
	Year	5	Topic	Properties and changes of materials
	Focus of assessment (National Curriculum statements)			
	<ul style="list-style-type: none"> Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic. Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets. 			
	Description of activity			
	The pupils were given objects made of different materials and asked to design a classification key to separate them focusing on the material rather than the object.			


EVIDENCE OF LEARNING		ASSESSMENT
Oral evidence	Examples of work	Knowledge
		
Teacher observations		Working scientifically
		Melissa asks appropriate questions to create the key, but there are gaps in her subject knowledge which lead to incorrect classification.

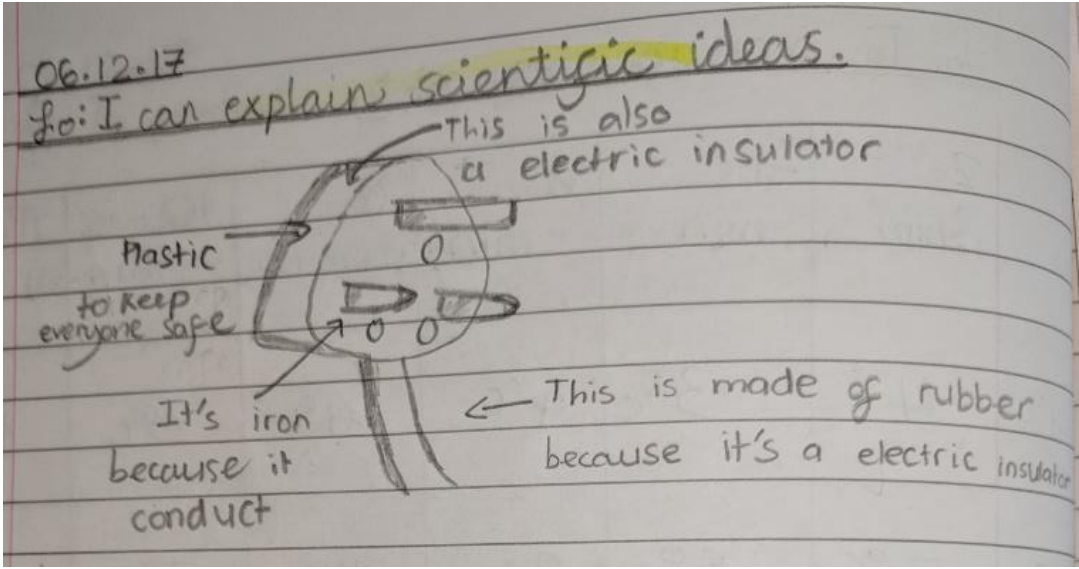
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	Description of activity			
	The pupils were asked to set up an investigation to explore how ice melted in different types of cups.			


EVIDENCE OF LEARNING		ASSESSMENT
Oral evidence	Examples of work	Knowledge
		Melissa is familiar with the use of thermal cups to keep drinks warm and applies this knowledge correctly when predicting the speed at which the ice will melt.
Teacher observations		Working scientifically
		Melissa's group planned their comparative test. They chose to use three different cups into which they put one ice cube and added warm water.

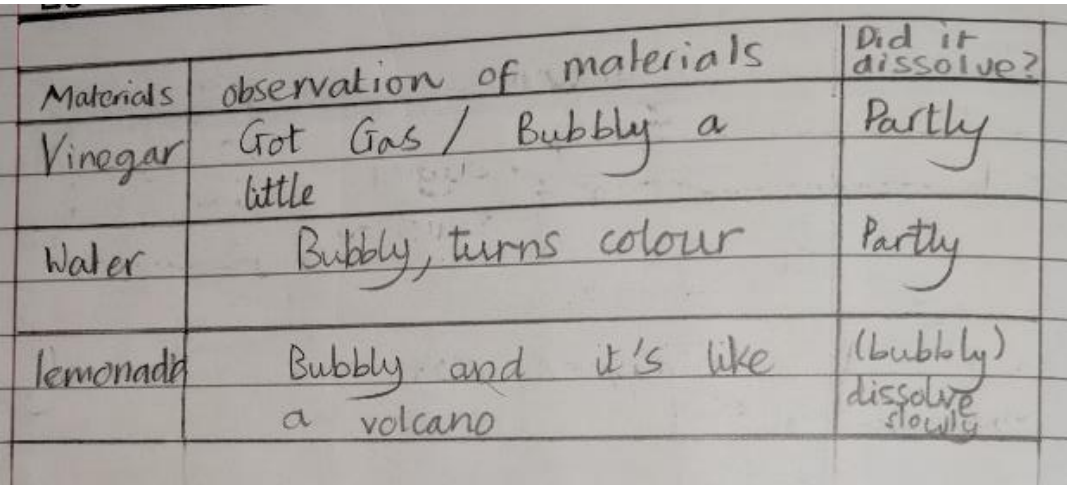
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	Description of activity			
	After making their predictions, the pupils set up the investigation. Other groups had not put water in the cups, only the ice cubes. For these groups, the ice melted more slowly in the thermal cup. The pupils were asked to think why the results were different.			


EVIDENCE OF LEARNING		ASSESSMENT																																
Oral evidence	Examples of work	Knowledge																																
<p>"The ice did melt quickest in the thermal cup because it kept the water warmer.</p> <p>"The thermal cup kept our water warm, so the ice melted more quickly, but it kept their ice cube cold, so it melted more slowly."</p>	 <table><thead><tr><th></th><th>0 min</th><th>2 min</th><th>4 min</th><th>6 min</th><th>8 min</th><th>10 min</th><th>12 min</th></tr></thead><tbody><tr><td>Polythene</td><td>-14°C</td><td>-4°C</td><td>-3°C</td><td>-4°C</td><td>-4°C</td><td>-3°C</td><td>-1°C</td></tr><tr><td>Plastic</td><td>-5°C</td><td>-7°C</td><td>-5°C</td><td>-8°C</td><td>-9°C</td><td>-7°C</td><td>-5°C</td></tr><tr><td>thermal</td><td>-18°C</td><td>-12°C</td><td>-9°C</td><td>-9°C</td><td>-10°C</td><td>-10°C</td><td>-11°C</td></tr></tbody></table>		0 min	2 min	4 min	6 min	8 min	10 min	12 min	Polythene	-14°C	-4°C	-3°C	-4°C	-4°C	-3°C	-1°C	Plastic	-5°C	-7°C	-5°C	-8°C	-9°C	-7°C	-5°C	thermal	-18°C	-12°C	-9°C	-9°C	-10°C	-10°C	-11°C	Melissa shows a good understanding of thermal insulators.
	0 min	2 min	4 min	6 min	8 min	10 min	12 min																											
Polythene	-14°C	-4°C	-3°C	-4°C	-4°C	-3°C	-1°C																											
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thermal	-18°C	-12°C	-9°C	-9°C	-10°C	-10°C	-11°C																											
Teacher observations		Working scientifically																																
		They decided to record the temperature in each cup every two minutes and observe how long the ice took to melt.																																

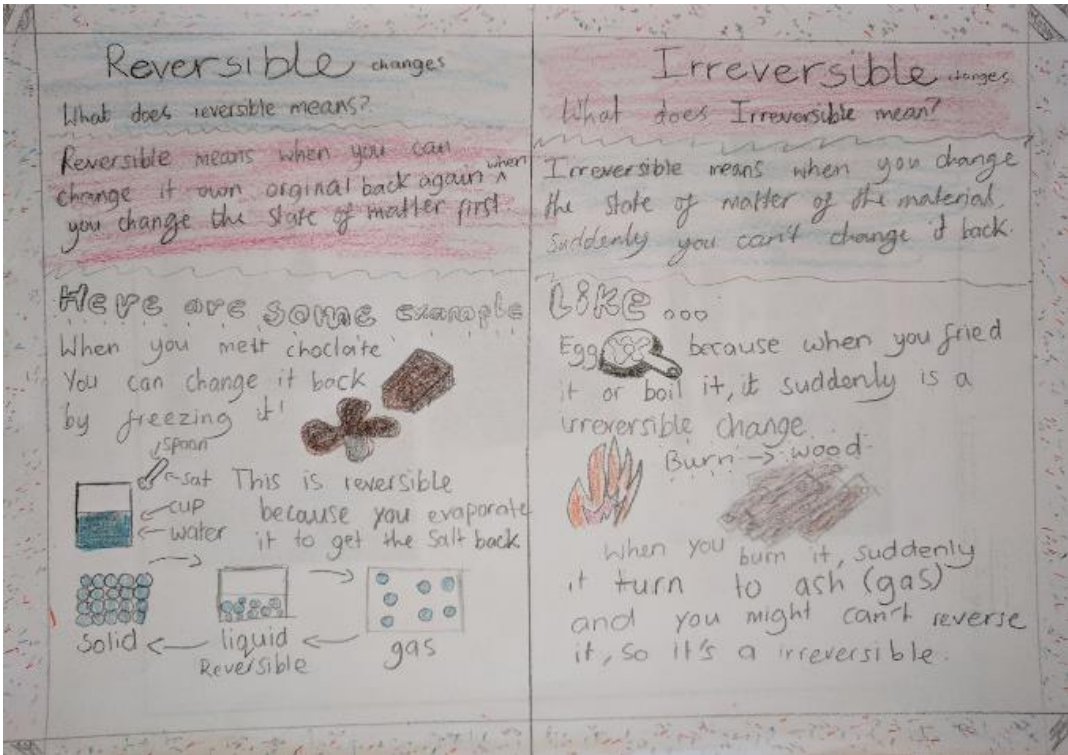
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	Focus of assessment (National Curriculum statements)			
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	Description of activity			
	The pupils were given some objects to explore and identify the materials they were made from and consider why these materials were chosen.			

EVIDENCE OF LEARNING		ASSESSMENT
Oral evidence	Examples of work	Knowledge
		This shows a good understanding of electrical conduction and insulation.
Teacher observations		Working scientifically

	Year	5	Topic	Properties and changes of materials
	Focus of assessment (National Curriculum statements)			
	<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.			
	Description of activity			
	The pupils were given a white powder (bicarbonate of soda) and asked to observe what happens when it was added to different liquids. The teacher then explained that the solid is reacting with the liquid to create a new material – the gas. The pupils then observed a fizzy tablet in water and the teacher demonstrated using this reaction to launch a cannister.			

EVIDENCE OF LEARNING		ASSESSMENT
Oral evidence	Examples of work	Knowledge
<p>“The tablet reacts with the water to make a gas. When there is too much gas to fit in the pot, the lid flies off.”</p>		<p>Melissa chose to note whether the powder dissolved or not, showing recollection of her prior knowledge.</p>
Teacher observations		<p>Melissa applies her knowledge of a chemical reaction to this new situation.</p>
		<p>Working scientifically</p>
		<p>Melissa records her observations in a table.</p>

	Year	5	Topic	Properties and changes of materials
	Focus of assessment (National Curriculum statements)			
	<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. 			
	Description of activity			
	The pupils were given time to research reversible and irreversible changes using the internet and then to present their understanding.			

EVIDENCE OF LEARNING		ASSESSMENT
Oral evidence	Examples of work	Knowledge
		<p>Melissa gives two examples of reversible changes (melting and dissolving) and explains how to change them back. She also gives two examples of irreversible changes (cooking and burning). She recognises that the wood has turned into a new material (ash).</p>
Teacher observations		Working scientifically



Overall summary

Secure

Melissa talks about the properties of the materials used for different objects based on her prior knowledge and testing, explaining why a material is suitable for a particular purpose. She sorts materials using a range of criteria. She understands that some solids dissolve in water to form a solution. She has carried out investigations into the rate of dissolving and can relate her results to her understanding. She separates mixtures using a range of techniques. She explains which changes are reversible and which are not reversible.