



Objectives		Extra Information
<p>Lesson 4 – Parent/ Child Version.</p>	<p>MAIN TEACHING – Making Noise About ‘The Scientific Method’. (10 minutes) Display for your child the words ‘Observe’, ‘Question’, ‘Hypothesis’, ‘Test & Record’, and ‘Conclusion’. Ask your child if they are familiar with some or all of these words, allow your child to volunteer definitions and then clearly define each word for them.</p>	<p>Materials Required:</p> <ul style="list-style-type: none"> ✓ Sheets of aluminium foil ✓ Glasses filled with water ✓ Metal forks ✓ Rulers ✓ Whiteboard/IWB
<p>L.O:</p> <p>To Understand And Apply The Scientific Method.</p>	<ul style="list-style-type: none"> ✓ Observe: Gather information, sometimes through senses like touch or hearing. ✓ Question: Ask a question about your observation. ✓ Hypothesis: Guess an answer to your question. ✓ Test & Record: Experiment to see if your hypothesis is correct and record the results. ✓ Conclusion: Look at the results of the experiment, compare them to your hypothesis and share what has been learnt. <p>Tell them that these terms represent the steps required to accurately record an experiment and that these steps are called ‘The Scientific Method’. With your child comfortable with each of these terms, tell them that they will be using the scientific method while experimenting with making sounds from materials.</p> <p>MAIN TASK – (15 minutes) Activity Breakdown:</p> <ol style="list-style-type: none"> 1 Make a table with each of the steps in the scientific method in order as the heading (as in the table below). 2 Lay a ruler flat on the table, slide half of it off the table lengthwise and, while pressing the ruler firmly against the table, flick the end of the ruler hanging off the table. 3 Under ‘Observe’ describe what was seen or heard (What noise did it make? How did it move?). 4 Under ‘Question’ write ‘How will the sound change if less of the ruler is hanging off the table?’ 5 Under ‘Hypothesis’ guess what you think will happen to the ruler if you apply your question (e.g. I think the ruler will make a lower pitch noise - vibrate slower- if there is less of the ruler hanging off the table). 	<p>Key Words:</p> <p>Observe Question Hypothesis Test Analyse Prove Disprove Extrapolate False Negative Positive</p> <p>Traffic light expected lesson outcomes:</p> <ul style="list-style-type: none"> ✓ I can list the steps involved in The Scientific method. ✓ I can identify the steps of The Scientific Method in an experiment. ✓ I can form a hypothesis and apply The Scientific Method to prove/ disprove it.



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	<p>6 Lay the ruler flat on the table as in step 2, this time only hang a quarter of the ruler off the table and flick the end of the ruler hanging off the table, being careful to use the same force as before.</p> <p>7 Record the results of this experiment under 'Test & Record' (Did the noise change? Did it move differently? How?).</p> <p>8 Now under 'Conclusion,' compare your hypothesis with the results of this experiment (Did you prove or disprove your hypothesis? What can you learn from this result?)</p> <table border="1" data-bbox="539 711 1514 890"> <thead> <tr> <th>Observe</th> <th>Question</th> <th>Hypothesis</th> <th>Test & Record</th> <th>Conclusion</th> </tr> </thead> <tbody> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p>Mini-Plenary: After they have completed the activity and formed their conclusions, ask them to share their results with you. Ask if their hypothesis was right or wrong. If their hypothesis was incorrect (that there will be a lower pitch noise if there is more of the ruler hanging off the table). Ask them to use the table again but this time under 'observation' write '<i>When there is less of the ruler hanging off the table it vibrates faster and makes a higher pitch sound</i>' and under 'question'. '<i>What happens when there is more of the ruler hanging off the table?</i>' Ask them to come up with a new 'hypothesis' for this new question, and to repeat the experiment with three-quarters of the ruler hanging off the edge of the table. Once this has been completed have the class discuss their results and make sure they were comfortable with each step of the process.</p>	Observe	Question	Hypothesis	Test & Record	Conclusion						
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	<p>SECONDARY TASK – (25 minutes) Activity Breakdown:</p> <ol style="list-style-type: none"> 1 Take a fork, a sheet of aluminium foil and glass filled with water. 2 Try to make a noise with these objects (e.g. strike the fork on the table, wobble the foil sheet, gently tap the side of the glass with a pencil). 3 Form at least one 'question' that may affect the sound made for each object (e.g. what happens when you strike the other end of the fork? what happens if the sheet is cut in half? what happens if you remove some of the water?). 4 Once you have picked your favourite question for each object, make one 'hypothesis' and perform one test for each of them, recording results and forming 'conclusions', recording everything in the table used in the previous experiment. <p>Mini-Plenary: Have your child read out their conclusions for each of the objects and discuss their results. Ask them why they think it's important to share and discuss conclusions in science. Explain that two scientists doing the same experiment may interpret the results differently. One might think that because the noise was louder that the pitch must be higher and the other might disagree, so after discussing their conclusions they may agree to perform another experiment, working together to get better results. Explain that there are also cases of false-positives and false-negatives, where the results of the experiment are false, possibly due to faulty equipment or poor test conditions. In these cases, it's useful to have other scientists repeat the experiment to verify the first experiment, which wouldn't be possible without open sharing and discussion in science.</p> <p>PLENARY – (10 minutes) Ask them if they can think of applications for the experiments they have done today. Acknowledge any that mention further understanding the materials. Explain that every material has physical properties, and experiments such as these can help us understand those properties.</p>	



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	<p>Explain that because we weren't accurately recording our results (e.g. the exact frequency, number of vibrations a second, of the ruler) the results of our experiments couldn't accurately define those properties, but there are often unforeseen uses that can come out of experiments, and so it is always worth sharing results even if your results aren't 100% accurate or seem obvious.</p> <p>Ask them if they have ever heard of a Foley artist.</p> <p>Explain that Foley artists create almost every sound they hear on tv and movies, for example using coconut halves knocking together to make the sound of the hoof steps of a horse, or wobbling sheets of metal to make the sound of thunder.</p> <p>Tell your child that Foley artists follow the scientific method when they look for these sounds, observing a sound they want to recreate, asking themselves the question of how to make or record a certain sound, hypothesising how they could then make the sound and then performing tests, and recording and sharing their results.</p> <p>If there is time, play a game with your child, asking how they think certain common sounds are made for television, using the following list:</p> <ul style="list-style-type: none"> ✓ Bones breaking = Celery being snapped in half ✓ Rain = Bacon frying in a pan ✓ Walking on grass = Shredded newspaper in a plastic bag ✓ Kiss = Kissing your own forearm ✓ Swing Set = Rusty hinge 	



Reflection	Child's Progress