



## Science planning with Sustainable Travel Links for Year 5 and 6 Investigating materials – scooter & cycle helmets

<b>Objectives:</b>	<ul style="list-style-type: none"> <li>• Research how chemists create new materials, for example, Spencer Silver, who invented the glue for sticky notes or Ruth Benerito, who invented wrinkle-free cotton</li> <li>• Compare and group together everyday materials on the basis of their properties, including their hardness,</li> <li>• Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic</li> <li>• Explore changes that are difficult to reverse, for example rusting</li> </ul>
<b>Success Criteria:</b>	<ul style="list-style-type: none"> <li>• A simple description of the work of Spencer Silver and Ruth Benerito</li> <li>• Reasons for grouping materials and a description of their properties</li> <li>• Ability to carry out comparative and fair tests using appropriate materials</li> <li>• Explanations of changes that is difficult to reverse</li> </ul>
<p>If possible ask chn/staff to bring in cycle helmets for this lesson. Also ask them to collect prior to the lesson, any polystyrene, bubble wrap, plastic containers from home that could be tested for durability and waterproofing</p>	
<p><b>Teacher Input with key questions:</b> Explain that today’s lesson is about materials and that we are going to investigate those used in cycle helmets.</p> <p><b>Intro:</b> Quick fire what do we know about materials and their properties? What are some of the materials that are most useful to us? If we could take 3 “life changing” objects with us on a desert island what would they be and why? Explain that we are going to look at two chemists who, in their own ways, have made life changing discoveries.</p> <p>Have copies of the information leaflet about Spencer Silver. In pairs the chn read and come up with 5 important facts about him and his invention. <a href="http://www.socialstudiesforkids.com/articles/currentevents/post-itsturn30.htm">http://www.socialstudiesforkids.com/articles/currentevents/post-itsturn30.htm</a></p> <p>Now look at the article – put on IWB screen about Ruth Benerito. What did she discover? <a href="http://www.mnn.com/green-tech/research-innovations/stories/ruth-benerito-pioneering-chemist-who-helped-invent-wrinkle">http://www.mnn.com/green-tech/research-innovations/stories/ruth-benerito-pioneering-chemist-who-helped-invent-wrinkle</a>.</p> <p>Compare and contrast these two chemists.</p> <p>Say that today we are going to investigate another “life changing “or life saves invention – the cycle/scooter helmet. Read through <a href="http://www.helmets.org/history.htm">http://www.helmets.org/history.htm</a></p> <p>Discuss the main points: Safety, Practicality, Design What might the problems have been? How much have cycle helmets changed? In groups look at the available cycle helmets. What do they notice about: Weight, Durability, Straps, Design, Materials? Are there any signs of non revisable changes such as dents, rust, water damage?</p> <p><b>Task:</b> Explain that today the children are going to investigate materials to find out which would make the best cycle helmet. What properties will they be focusing on? What vocabulary will they need to use? What is the big question? – Which materials will be the most suitable for the strap as well as the helmet? How will they test it – depending on the properties they are investigating? How will that test be fair? What do they predict will happen? How can the results be recorded? Show the children the different materials available. Emphasise that the materials do not need to look like a helmet.</p> <p><b>Put into groups</b> – allow time to discuss how they will carry out the investigation – will they all work on the same part or different components? Shell, inner, strap. Take some of the big questions. Support where needed and take pictures.</p>	
<p><b>Resources</b> Website links Plastic in different forms Foam Polystyrene Leather Lino Webbing Recording sheets / books</p>	
<p><b>Mini Plenary</b> What are some of the big questions? What conclusion have you reached? Have you recorded it? Show results to the class. Did your predictions match your results?</p>	
<p><b>Plenary</b> Show results to the class. Did your predictions match your results? Which materials would be best for which component? What properties do they have?</p>	
<p><b>Assessment</b></p> <ul style="list-style-type: none"> <li>• Can describe the work of Spencer Silver and Ruth Benerito</li> <li>• Can give reasons for grouping materials and a description of their properties</li> <li>• Can carry out comparative and fair tests using appropriate materials</li> <li>• Can explain changes that are difficult to reverse</li> </ul>	