Electrocuting Granny

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| **Topic:** Electricity and Circuits |  |
| **Curricular Link(s):**  Electricity   * Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches, and buzzers   Working Scientifically   * Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat reading when appropriate. | **Learning Objective(s):**  ALL – To be able to draw a simple circuit using the correct scientific symbols.  To be able to follow a simple procedure to test voltage and record results.  MOST – To be able to follow a simple procedure to generate results and record them appropriately.  SOME – To be able to generate a scientific hypothesis using key terminology (i.e., the more acidic the fruit, the higher the voltage). |
| **Risk Assessment:**  Piercing skin of fruit or vegetable may be difficult – provide a demonstration and support students with this.  Ensure that students understand the fruit and vegetables are not for human consumption. | **Essential Question(s):**  What is electricity and why is a battery needed in a circuit?  Which fruit or vegetable generates the most voltage? |
| **Equipment Required:**   * Fruit and vegetables (e**.g., 1 orange, 1 lemon, 1 lime, 1 grapefruit, 1 potatoes, 1 courgette, 1 carrot, 1 apple)** * **Voltmeters** * **Black and red leads** * Copper strips * Steel strips * 2p coins * Steel nails * Crocodile clips | **Resources Needed:**   * Electrocuting Granny powerpoint * Electrocuting Granny investigation worksheet for predictions, observations, and diagram |
| **Lesson Procedure:**   * Introduce relevant book extract using powerpoint   “It was exactly as though someone had pushed an electric wire through the underneath of her chair and switched on the current.”   * Elicit discussion on what is actually happening in a circuit using slides 4-6 * Use animated slides 7-12 to explain terms voltage and current   INDIVIDUAL WORK   * Students complete a drawing of simple circuit to check on their understanding   GROUP WORK   * Introduce practical   + Insert coin and steel nail into fruit/vegetable and connect to voltmeter using wires   + Students record voltage obtained on their worksheet   + Students should record observations on their worksheets   + Encourage close observation of metals to see if they have changed in any way   INDIVIDUAL WORK   * Students write an explanation of how a piece of fruit can be used to try and electrocute Granny * Provide students with key words: voltage and current * (Challenge) On worksheet: Which fruit/vegetable produced the highest voltage? Why do you think this is the case? | |