

Plan for Focused Assessment of Science

Topic: Electricity.	Year 6 Age 10-11	Title: Bulb brightness
Working Scientifically Plan: Plan a scientific enquiry to answer a question, recognising and controlling variables.		Conceptual Knowledge Compare variations in how components function.
Assessment Focus <ul style="list-style-type: none"> • Can children raise a question relating to simple circuits and the brightness of the bulb? • Can children decide what evidence to collect in order to answer the question? 		
<p>Activity <i>Today we are going to be electrical engineers.</i></p> <p>Each group/pair to have basic circuit components to include some variety between them (e.g. different thickness/length of high resistance (fuse) wires, number of bulbs/batteries available.) Set up a context requiring the need for light e.g. working late in winter/car headlights/torch light etc. Challenge each group to make a quick simple circuit to provide this light. There should be a variety of different circuits produced according to the resources, presenting an opportunity to compare and discuss differences in brightness and construction of circuitry (AfL).</p> <p>Introduce the main task: to investigate how they can change the brightness of the bulb using the full range of equipment available. In pairs/groups, use planning devices (Post-it Planners) to generate a list of variables which could be changed in their circuit. Each group/pair select the variable they wish to change and how they will measure the effect of this change and use this to form a scientific question. Draw the test circuit. Each group report their question and list their variables (what to measure, what to change, what to keep the same) to the class for feedback.</p> <p>Adapting the activity</p> <p>Support: as needed in the planning process. Help them to decide how to measure the brightness of the bulb. (Data-loggers/layered paper). Scaffolding frameworks.</p> <p>Extension: Children have a greater degree of control and independence in their choices. What further investigations could the children suggest to further their understanding?</p> <p>Other ideas: Bulbs could be substituted for motors or buzzers.</p> <div data-bbox="692 1541 1355 1720" data-label="Image"> </div> <p>Key Questions</p> <ul style="list-style-type: none"> • What factors in the circuit could be changed? • Which variable will you investigate? • Predict how changing your chosen variable affects the brightness of the bulb. • What will you do to find an answer to your question? • What will you keep the same? • Are your test results reliable and what improvements could be made? • Have you found an answer to your question? If yes, what? If not, can you explain why your investigation wasn't able to give you a clear answer? 		

Assessment Indicators

Not yet met: Can identify what they would like to test (e.g. adding more bulbs) but may need support in identifying and developing a succinct testable question, e.g. *"We will put in more bulbs to see if it gets brighter," should be re-worded to, "How does increasing the number of bulbs affect the brightness of each bulb?"*

Aware of the need for a fair test, but unable to identify the different types of variables (see below)

Meeting: Identify a range of circumstances that may affect the brightness of the bulb and define a succinct scientific question to test, e.g. *What will happen to the (brightness of the bulb), if we change the (length of wire), but keep the (number of batteries, voltage of bulbs, type of wire etc) the same.*

Able to plan a fair test unaided, identifying the different types of variables: what to measure, what to change, what to keep the same

Exceeding: Can identify control variables for a range of investigation questions, e.g. *if we look at wire length we need to keep the voltage the same but if we look at voltage we need to keep the wires the same.* Identifies reliability issues within the test.