Plan for Focused Assessment of Science

Topic: Electricity	Year 4 Age 8-9	Title: Does it conduct electricity?
Working Scientifically **Review:** Report on findings from enquires, including oral and written explanations, displays or presentations of results and conclusions.		**Conceptual Knowledge Context** Recognise some common conductors and insulators, and associate metals with being good conductors. Construct a simple series electrical circuit, identifying and naming the basic parts.

Assessment Focus

- Can children explain results and their conclusions?
- Can children recognise common conductors and insulators, and associate metals with being good conductors?

Activity *Today we are electrical engineers.*

Display and discuss a news story about soldiers wearing 'smart' clothing which conducts electricity: http://www.bbc.co.uk/news/technology-17580666
Introduce the terms conductors and insulators. Example context: Why would a soldier need to be able to conduct electricity? Give the scenario of a soldier in the desert that has ripped part of his 'smart' clothing and therefore lost part of the circuit in his GPS system. As he has no other navigation guides he is unable to provide his location for rescue. Ask the children which materials are used to make electric circuits. Ask why they think these materials are used. Explain that the soldier has a pack containing a variety of objects. Which could be used to complete a circuit to activate his GPS to save him?

Provide a collection of objects/ materials (including different metals and plastics). Ask them how they could find out whether electricity can pass through the materials and help them plan how to put the materials into a gap in a circuit with a bulb or buzzer to test them. Ask the children to focus on recording their results and explaining what the results show.
They then need to produce a radio or video message to send to the soldier explaining what he needs to do to produce a working circuit therefore enabling his GPS and why they are confident that this will work providing scientific evidence to reassure him! The children need to provide a list of all possible conductors in case some are damaged when he comes to use them. At the end of the activity, recap on the terms insulators and conductors.

Adapting the activity

Support: Provide a table template & support children recording their results
Extension: Challenge with extra items to see if they fit the pattern (e.g. lemon, pencil lead, rusty nail.) Challenge children to apply their findings to explain safety rules.

Key Questions

- Which objects completed the circuit? Why?
- Which things conducted electricity? What materials were they made from?
- Which did not conduct electricity? What materials were they made from?
- Can you think of anything else that might/might not conduct electricity? Explain your choices.

Assessment Indicators

Not yet met: Can refer to results in order to identify some objects that allow electricity to pass through them and others that do not

Meeting: Can describe the circuit and explain how their results (orally/written form) show that (in general) metals conduct electricity and other materials don't.

Exceeding: As above, but can also suggest other items to fit into the pattern and explore exceptions to the rule. Can apply the terms conduct/insulate to explain safety rules, e.g. not putting knife in toaster.