Electricity

Year 2

End Points:

- Identify things that use electricity
- A battery is a store of electrical energy
- Electricity is energy that we store and use to make things work
- Electricity can be dangerous
- An electrical circuit is a loop that allows electricity to travel around it
- An electrical circuit must have wires and a battery
- If a circuit is broken, electricity will not be able to flow around it
- Materials that allow electricity to pass through them are conductors
- Materials that do not allow electricity to pass through them are insulators
- Many, but not all, metals conduct electricity

This unit is a non-statutory unit that we have included in our curriculum in order to teach knowledge that pupils will build upon when they study electricity in Year 4. We felt that following the National Curriculum and not teaching electricity until Year 4 would miss an opportunity to build some understanding in Key Stage One. We also feel that doing this will avoid cognitive overload when pupils come to study this area of science in Year 4. This unit introduces electricity, what we use it for, how it behaves and how we must use it safely. Pupils will have two lessons dedicated to exploring circuits, asking and answering questions about how electricity behaves and what is needed to create a complete circuit. Pupils will learn about the differences between batteries and mains electricity and will understand how our electricity system is connected across the country and beyond. Pupils will understand that scientists use symbols to represent components of a circuit. This links to their understanding of using symbols on a map in geography. Pupils will work scientifically to investigate conductive and non-conductive materials. They will make predictions, plan and undertake an investigation and will explain their findings. Pupils will build on their understanding when they study electricity in Year 4.

Lesson Sequencing:

In lesson one, children will learn what electricity is and identify things that use electricity to function, including objects in their classroom. They will then distinguish between objects that use mains electricity or a battery. Lesson two will build on lesson one by explaining that electricity can be dangerous if not used properly. Children will identify how to use electricity safely, looking at plug sockets, wires and electrical appliances. In lessons three and four, children will learn about electrical circuits, the symbols we use to represent them and explore how to construct an

electrical circuit using the different components available. In the following lesson, children will learn about electrical conductors and insulators before investigating common materials to see whether they conduct or insulate electricity. In the assessment lesson, children will demonstrate the knowledge learnt by drawing a circuit and writing an explanation of what is happening when the circuit is connected.

Misconceptions:

- Batteries have electricity inside them.
- Electricity flows out of both ends of a battery.
- Electricity works by coming out of one end of a battery (unipolar model).

Working Scientifically criteria met in this unit:

- asking simple questions and recognising that they can be answered in different ways
- observing closely, using simple equipment
- performing simple tests
- identifying and classifying
- using their observations and ideas to suggest answers to questions
- gathering and recording data to help in answering questions