Unit 10 Powered Vehicles **Year 4** **Term 1**

Purpose of Unit

In this unit, children will develop their understanding of electric motors, how they work and how the speed of a motor can be changed using belts and pulleys. They will produce a frame structure with wheels and will learn how motors can be used within their models. They will develop their design skills by using their own ideas and experiences to produce clearly labelled drawings. The children will develop this structure with cladding and appropriate finishing techniques to create their product. The vehicles made in this unit will be linked to the computer using appropriate equipment and software to enable children to experience writing procedures to control the movement and direction of their vehicles.

Key Skills

Literacy
Children will be encouraged to discuss their ideas.. They will be taught strategies for talking in groups e.g. dealing with different ideas. They will be taught appropriate vocabulary e.g. *axle, wheel, motor*

Numeracy

Children will use measuring skills and their knowledge of right angles to produce their frame. Children will be introduced to ratio to help them to appreciate how pulleys work. They can calculate different ratios

ICT
A computer, control box and suitable software can be used to control the vehicle e.g. *Co-co, Economatics, Deltronics.* Symbols and logos can be designed to put on the body of vehicles.

Pupils will

- learn how electric motors are used to drive a variety of products;
- have gathered information about switches;
- learn how the speed and direction of a vehicle can be changed using an electric motor, pulleys and belts;
- have generated ideas and designed a vehicle using clear labelled drawings;
- have made a working vehicle accurately and finished it to a high standard;
- have controlled their vehicles using a computer, control box and suitable software.

Common Requirements

Problem-solving Skills e.g. Writing procedures for control.

Health and safety

Explain to the children that they must not experiment with mains electricity. It is not advisable to use rechargeable batteries for circuits – in the event of short circuit they could get very hot and may cause injury. Children should not investigate the rotating parts of machinery without adult supervision.