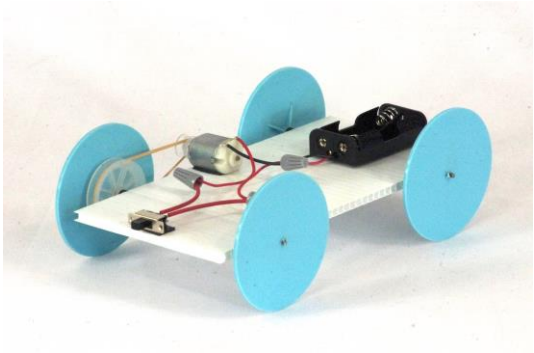
OVERVIEW

BLUEBIRD (Code: BLUEBIRD)

DESCRIPTION

This is a four-wheeled powered vehicle. Motive power is provided to the rear axle by an electric motor-driven belt (a rubber band).



This vehicle illustrates a basic electric circuit (switch, electricity supplied from a battery and motor).

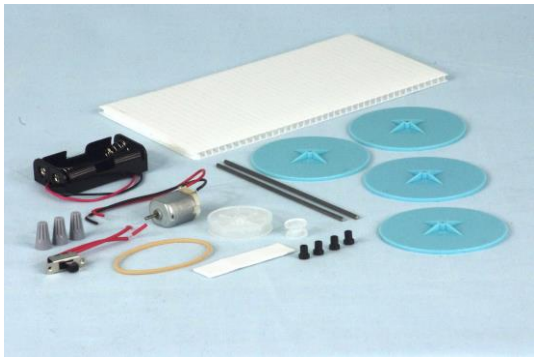
A number of these cars can be raced against each other and used to introduce simple concepts of electric circuits.

Once the car is built it can be decorated in the Art class.

LEVEL:	Introductory / Primary
HOURS TO CONSTRUCT:	1 - 2 hours
SKILL DEVELOPMENT:	• Planning and Design • Manufacturing / Assembly • Mechanical • Basic Electric Circuits • Circuit diagram symbol identification • Electrical • Investigation

WHAT'S IN THE KIT?

- ☐ All the mechanical and electrical components required to make the *BLUEBIRD* work including the battery holder, wheels, motor and switch.
- ☐ A detailed teaching unit with a complete parts list, design suggestions, detailed construction guidelines and suggestions for further investigation into electric circuits.



WHAT ELSE IS NEEDED?

The following items are required in addition to the kit and must be supplied by the maker – some are available from Scorpio Technology, but need to be ordered separately:

ADDITIONAL REQUIREMENTS	ORDERING CODE
2 x AA batteries (available in packs of 4 or 40)	BATTAA or BATTALK or BATTALK40
A small flat piece of scrap timber (such as pine) for when hammering the steel rod into the wheel holes Or Thick sturdy rubber mat	---

RECOMMENDED SPARES

We recommend the following spares when buying class sets of kits to replace parts damaged or lost by students:

ITEMS	ORDERING CODE
Switches with wires	SSWS-W
Driveline bearings (10 in a pack)	BEARBT
Rubber bands – Size 18 (10 in a pack)	RUBBAND18
Screw-On connectors (100 in a pack)	CONN-SC

TOOLS REQUIRED

The following tools are required. Some are available from Scorpio Technology, and can be ordered separately if required:

REQUIRED TOOLS	ORDERING CODE
Hammer	HAMMERCP/HAMMERCL
Scissors	-
Ruler and pen	-

ADDITIONAL / USEFUL TOOLS

Wire strippers	WIRESTR

ABOUT THE PROJECT

The major features of this project are the planning and assembly stages of a simple vehicle.

DESIGN PHASE

- ☐ The student should make a full size drawing to determine the position of the motor, slide switch, battery holder & wheels.
- ☐ Working within the constraints set by the wheel / axle / bearing width, the students can create their own unique *BLUEBIRD* design based on their drawings. This allows them to individualise their *BLUEBRID* design and increase their engagement in the project.

During the **Design phase**, students can:

- ☐ Take into account weight distribution, location of components and ease of operation
- ☐ Consider the practical aspects of construction and assembly. For example, clearance for the wheels, fitting of the belt (i.e., rubber band) on the pulleys

MAKING / CONSTRUCTION / ASSEMBLY

Once the Design process has been completed, the students will be able to start **building their design**. They will:

- ☐ Attach the switch, axles, a pulley and wheels onto the *BLUEBIRD* platform
- ☐ Mount a pulley onto the motor then attach that onto the platform
- ☐ Wire up the battery holder, motor and switch using the screw-on connectors
- ☐ Connect the motor mounted pulley to axle mounted pulley using the belt (i.e. rubber band)
- ☐ Test and adjust the *BLUEBIRD*
- ☐ Troubleshoot any problems!

DOES THE TEACHING UNIT INCLUDE ANY THEORY?

The Teaching unit does not have a THEORY section. However, it does have an "Items for Investigation" section that covers:

- ☐ Measuring average speed
- ☐ Electric circuit diagrams
    - representation as a line diagram
    - symbols used
    - the colour of wires in electric circuits