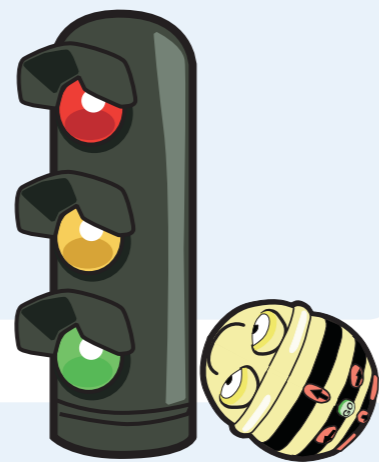


Control

Levelled Examples

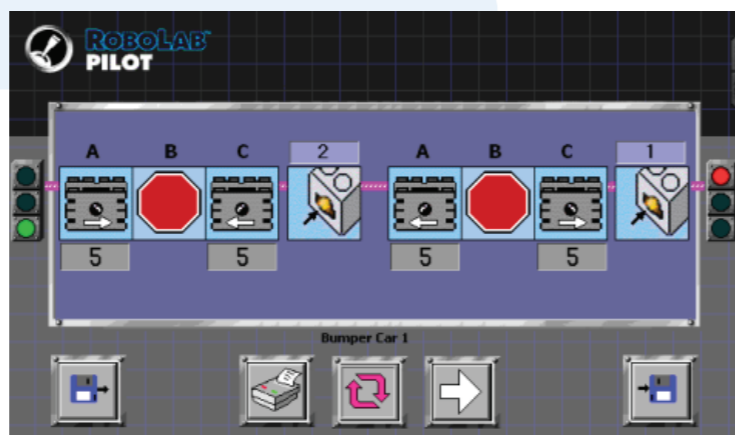


Context:

Children were exploring RoboLab to control a Lego bumper car. They had been creating, testing, improving and refining sequences of instructions. They also used sensors to monitor events and respond to them.

What the children did:

Children used RoboLab (Pilot Level 3) to control a Lego model. They sent the model forward and back, using sensors to trigger the next step in their sequence. They used loop to run the sequence of instructions continuously.



What the children said:

Why is it travelling in a circle when both motors are moving forward?

Look! The motors are facing different directions on the car.

Pupils should:

- Know how to adjust and improve procedures in the light of testing.
- Know how to program a device so that it is controlled by a sensor.
- Know how to build and program a model with devices and sensors.
- Know how to use a sensor to change the actions of a device.

Next steps:

Know how to change instructions to make a device work more efficiently.

Suggested resources:

Control software / equipment: RoboLab (plus RCX Lego Brick, Transmitter and lego kit), 2Simple NXT (plus NXT brick), Roamer (plus Control Box), Coco or Junior Control Insight (plus Control Box), controllable devices e.g. lights, motors, buzzers, sensors e.g. light and touch sensors

Example Cross Curricular Activities:

- Control a bumper car to change direction when a touch sensor is activated (DT).
- Control a car park barrier to lift or fall in response to a touch or light sensor (DT / Science).
- Control a lighthouse to operate a sequence of sounds and lights only at night (DT / Science / Geography / History).
- Control a car / burglar alarm to operate a sequence of sounds and lights if the door has been opened, and to stop if the key is used (DT / Science).
- Write instructions for operating a controllable device (Literacy).

Attainment target for ICT

Level 3

Pupils use ICT to save information and to find and use appropriate stored information, following straightforward lines of enquiry. They use ICT to generate, develop, organise and present their work. They share and exchange their ideas with others. They use sequences of instructions to control devices and achieve specific outcomes. They make appropriate choices when using ICT based models or simulations to help them find things out and solve problems. They describe their use of ICT and its use outside school.

Level 4

Pupils understand the need for care in framing questions when collecting, finding and interrogating information. They interpret their findings, question plausibility and recognise that poor quality information leads to unreliable results. They add to, amend and combine different forms of information from a variety of sources. They use ICT to present information in different forms and show they are aware of the intended audience and the need for quality in their presentations. They exchange information and ideas with others in a variety of ways, including using email. **They use ICT systems to control events in a predetermined manner and to sense physical data.** They use ICT based models and simulations to explore patterns and relationships, and make predictions about the consequences of their decisions. They compare their use of ICT with other methods and with its use outside school.

Level 5

Pupils select the information they need for different purposes, check its accuracy and organise it in a form suitable for processing. They use ICT to structure, refine and present information in different forms and styles for specific purposes and audiences. They exchange information and ideas with others in a variety of ways, including using email. They create sequences of instructions to control events, and understand the need to be precise when framing and sequencing instructions. They understand how ICT devices with sensors can be used to monitor and measure external events. They explore the effects of changing the variables in an ICT based model. They discuss their knowledge and experience of using ICT and their observations of its use outside school. They assess the use of ICT in their work and are able to reflect critically in order to make improvements in subsequent work.