

TWIST AND TURN

To enter a sequence of commands that guides a floor robot.

†† Pairs or groups of three.

🕒 30 minutes at the computer; 15 minutes discussion/demonstration.

Previous skills/knowledge needed

The children need to know the basic commands to control the robot. These are: FORWARDS, BACKWARDS, RIGHT, LEFT, CLEAR, ENTRY.

Key background information

Often, we interact with technology through key pressing. From mobile telephones to sophisticated camcorders, we press a variety of buttons to transmit our instructions. Practice at entering sequences of commands is important for children and has good educational value. A Logo type of language (see 'Squares all over' activity on page 90) is often used in the programming of classroom floor robots. This activity offers the children opportunities to build on experience gained in Key Stage 1 in the programming of robots. The calculation of sequences of commands helps the children to develop particular mathematical skills and so using a robot provides many opportunities to develop estimation skills in distance, rate of turn, time and clarity in direction of turning.

Preparation

Set up the IT equipment and ensure that a smooth clear floor area is available for the robot activity.

Vocabulary

Input, direction, heading, angle, turn, command, route, sequence.

Resources needed

A computer, Logo software, a floor robot, a printer, several paper cups, a clear smooth floor area.

What to do

Provide a whole class demonstration to introduce the activity to the children. Place the robot between two paper cups and tell them that the cups mark out a 'garage'. Set up another paper cup nearby. Initially, the task is to programme the robot to leave the garage and then to go around the nearby paper cup before returning to the garage. The route can be made as complicated as you wish, for example by adding a second cup the route becomes a figure of eight around and between the two cups before going back to the garage. You could also label a number of paper cups 1, 2, 3, and so on, and set a slalom task to be done in numerical or, perhaps, reverse order. There is no limit to the degree of challenge and intrigue in the route that you could set up for the children.

Now allow the children access to the robot to try out the different route challenges for themselves. To enable all of them to participate will take time. It is important that they experiment and although 30 minutes is recommended it could take some of the children longer. It is essential that they record their sequences and include plans of the route taken by the robot. These plans will help them to think through the sequence, choose appropriate distance values and sort out left from right turns (easy to confuse!).

The robot has no screen to remind the children which keys have been pressed, so it is easy to lose track of where

they are in the sequence. Emphasise to them the importance of recording their commands. Arrange it so that one child enters the key presses, one writes down the sequence and a third paces out the route bit by bit. The child pacing out should ensure that the right and lefts are sorted out.

Suggestion(s) for extension

By introducing further challenge into the route the confident children should be stretched appropriately.

Suggestion(s) for support

Keep the activities straightforward for the less confident children by requiring the robot to make short journeys.

Assessment opportunities

This activity will allow you to assess how well the children create, test and modify sequences of instructions to control the robot. Look for clear thinking with their sequencing and an understanding of the various Logo commands.

Display ideas

Enlarge the children's plans of the robot routes and display them alongside the corresponding sequence of commands.

