Pīkau Name: Programming with Sequence and Output: CT PO2

Video Name: Programming a bot (EMP06-3)

Presenter: Tim Bell

These simple Bee-bots have just four main commands available: forward, back, left and right. Yet these simple commands can be used to teach a number of programming concepts.

Here, the students are given the goal of getting the bee to the square where the flower is.

This student has made a common initial mistake - the "left" command rotates the bot 90 degrees, but doesn't move it to the left. This provides a great opportunity to explain that there's a bug in the program, and students will soon work out how to fix the bug.

Introducing obstacles makes the programming harder, and here we're also decomposing the problem into two parts: get the bee to the water, and then from the water to the flower. A different programmer can work on each of these segments at the same time using cards with the commands on them. Each programmer can debug their programs independently. The first part of the program is working correctly, and gets the bee to the water. The second programmer also writes and debugs their part of the decomposed task.

The two parts of the program are now put together and the combined program is tested. Because each part was working there's a good chance that this more complicated program will work first time. Breaking programs into modules and having different people working on each part is important for getting large programs written in a short time.

Other robots are available that can follow these simple commands including lots of online games and challenges, many of which are available for free.