# Lesson 7 – Light Follower

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| The Big Picture – Why Is This Relevant? | Learning Objectives |
| * To understand how we can interact with our environment and process sensor data to impact the outputs we produce | * Use sensors to detect the environment * Use code to take a reading from the light sensor * Use selection to change actions based on a sensor reading |
| Engagement – How Can I Engage Learners? | Assessment for Learning |
| * Learners will learn best from experimenting, they will enjoy actively making the robot react by turning away or towards the light | **Expected Progress:**   * Learners can follow the sample code   **Good Progress:**   * Learners complete Stretch Tasks   **Exceptional Progress:**   * Learners show understanding of how the external environment (brightness of the room) affects the sensor data |
| Links to KS3 Programme of Study | |
| * understand the hardware and software components that make up computer systems, and how they communicate with one another and with other systems * use 2 or more programming languages, at least one of which is textual, to solve a variety of computational problem | |
| Key Concepts | Key Words |
| * Driving motors * Sequence, selection and iteration * Processing sensor data and making decisions based on the result | * Selection * Sensor * Analogue * Digital * Light level * Range |
| Differentiation | Resources |
| Some Learners may only be able to do this using a sequence of instructions, encourage Learners to use iteration to create repeating patterns  Some Learners will find the direct connection difficult to grasp with the combination of digital and analogue pins being used. The Bit:Bot extension simplifies this as a single action | * Lesson 7 ppt * Lesson 7 Activity Sheet * Lesson 7 lightfollowerPXT.hex * PC * Access to <https://makecode.microbit.org> * Access to [www.4tronix.co.uk/bitbot](http://www.4tronix.co.uk/bitbot) if required * Bit:Bot * Torch * Remote control or infrared/laser pointer |
| Lesson Flow | |
| * Share the objectives with the Learners * Add the extensions if not already added * Remind Learners to how to use the light sensor * Discuss how the light sensor works, pay attention to the need for a digital switch and analogue data return * Demonstrate how the sensor can be programmed without the need for the Bit:Bot extension and how this might be useful if they are not using the Bit:Bot chassis later. Allow Learners some time to experiment * Demonstrate how the light extension can be used to simplify the process. Give Learners a chance to experiment and set a little robot reaction challenge (Slide 6) * Encourage Learner to complete the stretch tasks. It is especially important that they start to consider background light and its impact as well as how invisible light could be used (infrared) * Encourage iteration for repeating patterns rather than sequences | |
| Making | |
| There are no making activities in this lesson. | |