# Lesson 26 – Kitronix Halo and Iteration

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| The Big Picture – Why Is This Relevant? | Learning Objectives |
| * LEDs are everywhere, screens, phones displays providing data and information. * Addressable LEDs (pixels) enable the user to program individual LEDs as part of a group of LEDs | * Be aware of addressable LEDs * Use iteration * Program the Kitronix Halo |
| Engagement – How Can I Engage Learners? | Assessment for Learning |
| * The Kitronix Halo is bright and colourful and will attract the attention of the Learners. The teacher can provide a demonstration as class begins. * Learners will enjoy lighting up the pixels and adjust the colours. | **Expected Progress:**   * Learners set up the Kitronix Halo * Learners can program at least two of the pixels   **Good Progress:**   * Learners can program a sequence of pixels, the light chaser * Learners use the clear code to improve the program   **Exceptional Progress:**   * Learners use iteration to create an efficient Kitronix Halo program |
| Key Concepts | Key Words |
| * How iteration works and improves the efficiency of a program * How RGB LEDs work * Addressable LEDs, how they work and how to program them | * Addressable LED * RGB Values * Iteration |
| Differentiation | Resources |
| The basic pixel program is fairly straightforward and all Learners can edit the settings to control each pixel and the colour. Learners may need support with the concept of iteration and how to program is coded. | * Lesson 26 ppt * Lesson 26 Activity Sheet * Sample Python programs * 1 micro:bit per Learner * 1 USB cable to connect the micro:bit to a PC * A PC * Access to [micro:bit Python Editor](https://python.microbit.org/v/3) * Kitronik Halo ( alternatives such as NeoPixel Ring can be used) |
| Lesson Flow | |
| * Have the Halo flashing or ON as the Learners enter the classroom * Introduce the features of the Halo * Learners attached the Halo to their micro:bit (This can be prepared before the lesson to save time) * Teacher to support * Teacher explains how multi-coloured LEDs, RGB LEDs work and produce a range of colours * Discuss the RGB values and how they are formed * Introduce the start code for the Halo, using the neopixel module * Learners create basic program to control one pixel * Teacher to support * Teacher to introduce and explain iteration and how it is used in programming * Discuss the example code * Learners complete activities * Teacher to support where required | |
| Making | |
| There are no making activities in this lesson. | |