

## Coding with Micro:bits

### In this guide

- Vital Micro:bit box
- Key websites
- Getting started
- Year 3 & 4 projects
- Year 5 & 6 projects
- Further ideas
- Extra challenge

### Vital Micro:bit box

A class set of Micro:bits can be hired from Vital. The set contains the following:

- 30 x V2 Micro:bits
- 30 x Battery packs
- 30 x USB cables
- 1 x Vital Micro:bit resource pack

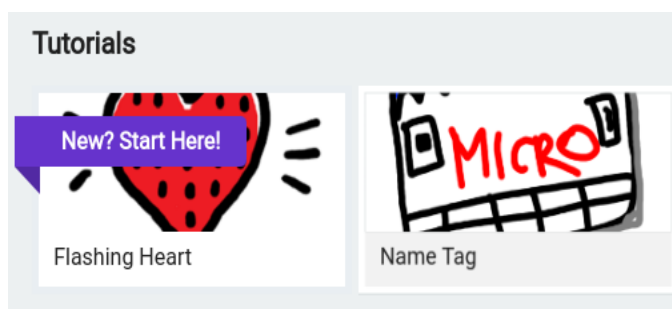
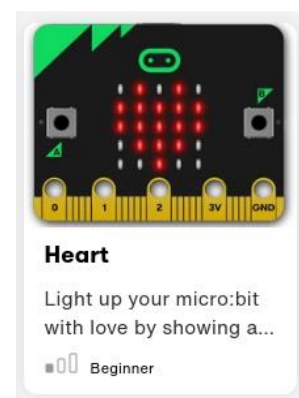
## Key websites for Microbits

Core website	<a href="https://microbit.org/">https://microbit.org/</a>
Getting started	<a href="https://microbit.org/get-started/first-steps/introduction/">https://microbit.org/get-started/first-steps/introduction/</a>
Online Teacher CPD courses	<a href="https://microbit.thinkific.com/">https://microbit.thinkific.com/</a>
How to download code	<a href="https://microbit.org/get-started/first-steps/set-up/">https://microbit.org/get-started/first-steps/set-up/</a>
Micro:bit Support	<a href="https://support.microbit.org/support/home">https://support.microbit.org/support/home</a>
Data logging	<a href="https://microbit.org/get-started/user-guide/data-logging/">https://microbit.org/get-started/user-guide/data-logging/</a>
NCCE Teach Computing Y6 Unit (with planning)	<a href="https://teachcomputing.org/curriculum/key-stage-2/programming-b-sensing/the-micro-bit">https://teachcomputing.org/curriculum/key-stage-2/programming-b-sensing/the-micro-bit</a>
Posters & Certificates	<a href="https://microbit.org/teach/classroom-resources/">https://microbit.org/teach/classroom-resources/</a>

## Getting started

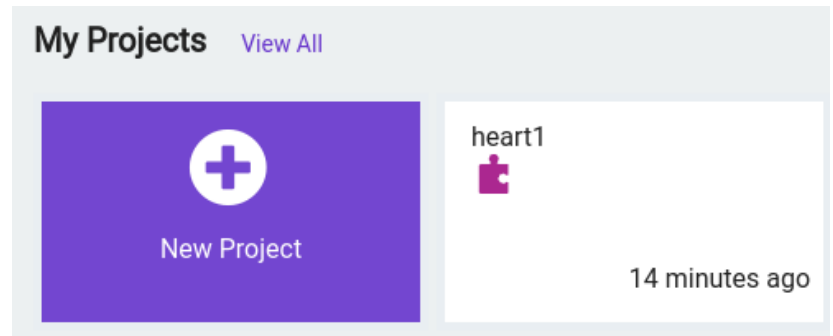
The Microbit.org website supports children getting started with their coding journey. The projects are marked as 'Beginner' level and get progressively more challenging until they move on to 'Intermediate'.

Clicking on the project will give you a wealth of resources to support the learners including video of how to complete the projects. This section is really useful for teachers as it includes an 'Improve it' section which gives suggestions of how pupils can improve/ develop the code.



When pupils come to start a project it is helpful for them to go through a tutorial. <https://makecode.microbit.org/>. These tutorials take the pupils through the coding process step by step and restrict the blocks they can see. They essentially ensure every pupil is successful. This is a good place to start while pupils build their confidence.

In the same section is the 'My Projects' area. This acts as a blank coding page with all the features available. Children can use this to work on the 'improve it' suggestions mentioned earlier. As children gain in confidence they will design their code here without using the tutorial section. The projects need to be named and are saved which is useful for debugging and also for assessment purposes.



## Possible teaching sequences (using projects) across KS2

This is something that teachers have requested and is included as a rough guide with links to projects on the microbit.org website. We have made links between the projects and some of the National Curriculum objectives for computing. The aim of this is to help teachers with progression across key stage 2.

### Year 3 & 4

These projects could also be done with a Year 5 & 6 class if they have not had experience of using Micro:bits before.

Project name	Curriculum links
1. Name Badge <a href="https://microbit.org/projects/make-it-code-it/name-badge/">https://microbit.org/projects/make-it-code-it/name-badge/</a>	<ul style="list-style-type: none"> <li>Design write and debug simple programs that accomplish specific goals</li> </ul>
2. Beating heart <a href="https://microbit.org/projects/make-it-code-it/beating-heart/">https://microbit.org/projects/make-it-code-it/beating-heart/</a>	<ul style="list-style-type: none"> <li>Design write and debug simple programs that accomplish specific goals</li> <li>Using repetition (loops)</li> </ul>
3. Emotion badge <a href="https://microbit.org/projects/make-it-code-it/emotion-badge/">https://microbit.org/projects/make-it-code-it/emotion-badge/</a>	<ul style="list-style-type: none"> <li>Working with inputs and outputs within algorithms</li> </ul>
4. Dice <a href="https://microbit.org/projects/make-it-code-it/dice/">https://microbit.org/projects/make-it-code-it/dice/</a>	<ul style="list-style-type: none"> <li>Working with inputs and outputs within algorithms</li> </ul>
5. Night Light <a href="https://microbit.org/projects/make-it-code-it/nightlight/">https://microbit.org/projects/make-it-code-it/nightlight/</a>	<ul style="list-style-type: none"> <li>Working with selection within algorithms</li> </ul>
6. Rock, Paper scissors game	<ul style="list-style-type: none"> <li>Working with inputs and outputs within</li> </ul>

<a href="https://microbit.org/projects/make-it-code-it/rock-paper-scissors/">https://microbit.org/projects/make-it-code-it/rock-paper-scissors/</a>	algorithms
7. Jukebox <a href="https://microbit.org/projects/make-it-code-it/jukebox/">https://microbit.org/projects/make-it-code-it/jukebox/</a>	<ul style="list-style-type: none"> <li>Working with inputs and outputs within algorithms</li> </ul>
8. Tilt alarm <a href="https://microbit.org/projects/make-it-code-it/simple-tilt-alarm/">https://microbit.org/projects/make-it-code-it/simple-tilt-alarm/</a>	<ul style="list-style-type: none"> <li>Working with inputs and outputs and sensors</li> </ul>

## Year 5 & 6

1. Clap lights <a href="https://microbit.org/projects/make-it-code-it/clap-lights/">https://microbit.org/projects/make-it-code-it/clap-lights/</a>	<ul style="list-style-type: none"> <li>Input, output</li> <li>Selection</li> </ul>
2.. Step counter <a href="https://makecode.microbit.org/#editor">https://makecode.microbit.org/#editor</a>	<ul style="list-style-type: none"> <li>Working with variables within algorithms</li> <li>Inputs, outputs</li> </ul>
3. . Counter <a href="https://microbit.org/projects/make-it-code-it/counter/">https://microbit.org/projects/make-it-code-it/counter/</a>	<ul style="list-style-type: none"> <li>Working with variables within algorithms</li> <li>Inputs, outputs</li> </ul>
4. . Sound meter <a href="https://microbit.org/projects/make-it-code-it/sound-meter/">https://microbit.org/projects/make-it-code-it/sound-meter/</a>	<ul style="list-style-type: none"> <li>Inputs, outputs and sensors</li> <li>Data handling</li> </ul>
5. Which way now <a href="https://microbit.org/projects/make-it-code-it/which-way-now/">https://microbit.org/projects/make-it-code-it/which-way-now/</a>	<ul style="list-style-type: none"> <li>Inputs, outputs</li> <li>Selection and variables</li> </ul>
6. . Tell me a secret <a href="https://microbit.org/projects/make-it-code-it/tell-me-a-secret/">https://microbit.org/projects/make-it-code-it/tell-me-a-secret/</a>	<ul style="list-style-type: none"> <li>Selection</li> <li>Communication (Radio waves)</li> </ul>
7. Jukebox with volume <a href="https://microbit.org/projects/make-it-code-it/jukebox-with-volume/">https://microbit.org/projects/make-it-code-it/jukebox-with-volume/</a>	<ul style="list-style-type: none"> <li>Inputs and outputs</li> <li>Variables</li> <li>Selection</li> </ul>
8. Environment data logger <a href="https://microbit.org/projects/make-it-code-it/environment-data-logger/">https://microbit.org/projects/make-it-code-it/environment-data-logger/</a>	<ul style="list-style-type: none"> <li>Data logging</li> </ul>
9. Micro:Bit pet <a href="https://microbit.org/projects/make-it-code-it/microbit-pet/">https://microbit.org/projects/make-it-code-it/microbit-pet/</a>	<ul style="list-style-type: none"> <li>Variables</li> <li>Loops</li> <li>Selection</li> </ul>
10. Energy Light meter <a href="https://microbit.org/projects/make-it-code-it/energy-light-meter/">https://microbit.org/projects/make-it-code-it/energy-light-meter/</a>	<ul style="list-style-type: none"> <li>Variables</li> <li>Data logging</li> </ul>

## Further ideas for meeting the curriculum requirements with Micro:bits

<b>Variables and selection</b>	<ul style="list-style-type: none"><li>● Explore sensors on v2 micro:bits e.g. if touches something cold then flash blue (maths temperature link, science investigation?)</li><li>● Stepcounters - 'steps' variable (PE healthy/active bodies, Science human bodies link)</li><li>● Multiple options games e.g. rock paper scissors</li><li>● Data logging</li><li>● Times table tester (link with maths)</li><li>● Direction game and compass points - use two Micro:Bits within one group to be led on an adventure but make note of the compass directions!</li></ul>
<b>Sequencing</b>	Give Micro:Bit code for a project that doesn't work (sequence is jumbled) - children need to debug the code and correct the sequence for it to work properly!
<b>Loops and repetition</b>	Code Micro:bit with forever loop or repeat x times etc

## Extra challenge

### **Accessories**

There are a range of accessories that can be purchased for the Micro:bit which allow your students to go further with their coding. Purchasing some of these accessories also allows for excellent cross curricular links with subjects such as DT and science. Kitronik sell a variety of extra resources with suggested age ratings attached.

<https://kitronik.co.uk/collections/accessories-for-the-bbc-micro-bit>

### **Python**

Children can achieve the curriculum objectives using block coding but if some children are finding that does not stretch them enough then the Make code editor also supports Python code. This is a text based code and some children may wish to use the tutorials and look at some of the simpler projects using Python instead of block coding.



£25.50

Kitronik Simple Robotics Kit  
for the BBC micro:bit