# Lesson 2 – The Arduino IoT Cloud

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| The big picture – why is this relevant? | Learning objectives: |
| * The internet of things is changing the way that we interact with everyday objects * The traditional idea that only computers and smart phones can connect to the internet is no longer true. Many devices from washing machines and fridges through to vacuum cleaners and light bulbs can now be connected to the internet | * To understand the purpose of an algorithm * To understand how to represent algorithms using flowcharts * To understand how algorithms are used to plan a program prior to it being developed * To understand the purpose of an IDE * To understand how functions are used * To be able to create an application on the Arduino IoT cloud |
| Engagement – how can I engage learners? | Assessment for learning |
| * This lesson will build on the previous lesson; adding further technical detail concerning how IoT devices actually work * Learners will be amazed at the possibilities that the internet offers. Many may not have realised that is possible to connect a wide range of objects to the internet * Learners will have the opportunity to develop their first device which is controllable over the Internet | **Expected progress:**   * Students will be able to follow instructions to develop their first IoT application   **Good progress:**   * Students will be able to represent an algorithm using a flowchart and be able to implement the algorithm as a coded solution   **Exceptional progress:**   * Students will be able to develop the logic to control an IoT device and understand the purpose of functions |
| Key concepts: | Key words: |
| * The internet is a globally connected network of devices * The internet of things allows everyday objects to the connected to the internet using an embedded system * An IDE can be used to develop coded solutions | * Internet * Internet of things * IDE * Functions * Cloud |
| Differentiation: | Resources: |
| More able students can expand the core task through building their own circuit to control an external LED. | * The Arduino Cloud ppt * L2 Flow Chart Worksheet * L2 Arduino Cloud Worksheet * Arduino MKR1000 |
| Lesson flow | |
| * Ask students if they have heard the term algorithm. Explain that it is a set of instructions which, when followed, solve a problem. Ask students if they can think of any ways in which an algorithm can be represented. Students may come up with flow charts and pseudocode. Give students five minutes to identify features of an effective algorithm. Discuss findings as a group with support from Slide 3. * Explain to students that today they will be developing an IoT device. The device will be remotely controlled and will allow an LED to be turn on and off through a switch on an internet dashboard. Discuss the different flow chart symbols that need to be used to plan this algorithm. Students should then complete the flow chart worksheet. * Using Slide 4, discuss the different features that an IDE offers (integrated development environment). Explain that students will soon be using the Arduino IoT cloud to develop their coded solutions. * Using Slide 6, highlight that functions can be useful when writing code. Once function has been tested it can be used in many different applications. In order to use a function is has to be imported into the code through the command #include. Point out the functions that have been used in the sample code on slide 6. * Demonstrate the IoT cloud interface through using Slide 7. It may also be useful to show students a live demo of the different tabs within the cloud. * Students should then complete the Arduino Cloud Worksheet where they will develop their first coded application to control an IoT device. | |
| Making | |
| * Students will develop a device which allows an LED to be remotely controlled. | |