## Lesson 3 – Images, Variables and Functions

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| The Big Picture – Why Is This Relevant? | Learning Objectives |
| * Functions and variables are staples of any program. Digital animation and CGI are used in most films and games | * Know what a variable and a function are * Know how to create a simple image * Create a simple animation |
| Engagement – How Can I Engage Learners? | Assessment for Learning |
| * Building the animations is fun and Learners could show each other their creations * Learners could be shown a cartoon or film clip to demonstrate the use of animation in media | **Expected Progress:**   * Learners can display a simple image   **Good Progress:**   * Learners complete the ‘dot’ program * Learners use variable and functions   **Exceptional Progress:**   * Learners create new variables and functions * Learners use them to create a complex animation |
| Links to KS3 Programme of Study | |
| * use 2 or more programming languages, at least one of which is textual, to solve a variety of computational problems; make appropriate use of data structures [for example, lists, tables or arrays]; design and develop modular programs that use procedures or functions * understand how instructions are stored and executed within a computer system; understand how data of various types (including text, sounds and pictures) can be represented and manipulated digitally, in the form of binary digit | |
| Key Concepts | Key Words |
| * Learning what the role of variables and functions are * Creating variables and functions * Creating images * Using these to build a simple animation | * Import * Variable * Function * Animation |
| Differentiation | Resources |
| When completing the activity, if Learners are struggling to create a new animation, they can make the dot roll backwards, or move it upwards.  Learners may benefit from planning the animation first and then writing the code for it. | * Lesson 3 ppt * Lesson 3 Activity Sheet * Python files ‘boat’ and ‘dot’ * 1 micro:bit per learner * 1 USB cable to connect the micro:bit to a PC * A PC * Access to <https://python.microbit.org/v/3> |
| Lesson flow | |
| * Teacher introduces the ‘import’ function * Teacher could show a micro:bit with an image displayed on it * Learners can program the boat image to their micro:bits * Discuss how to create custom images * Introduce variables, how to make them and use them for creating images * Introduce functions, how to make them and use them for creating images * Learners complete first activity, building a ‘dot’ animation * Learners build their own animation and show with the teacher and class * Recap what a variable and function are. | |
| Making | |
| There are no making activities in this lesson. | |