# Lesson 10 – Making Music: Iteration

|  |  |
| --- | --- |
| The Big Picture – Why Is This Relevant? | Learning Objectives |
| * Many computer programs run certain instructions a number of times. Through using loops (iteration) programs can be written to be as efficient as possible. * Music consists of loops. Relatively short sequences of code can produce repeating tones. Through using loops appropriately learners will be able to write efficient programs | * Understand the meaning of the term “iteration” * Understand that using loops can help to ensure that learners write efficient programs |
| Engagement – How Can I Engage Learners? | Assessment for Learning |
| * Learners will enjoy using loops to produce music. This will be the first time that they will have written code to produce audible sounds which they will find exciting * Once learners have understood how to use loops to produce musical sequences, they will enjoy having the opportunity to produce their own compositions | **Expected Progress:**   * All learners will understand that being able to repeat code without having to duplicate it will result in a more efficient program being produced. They will be able to follow a tutorial to produce a piece of music   **Good Progress:**   * Learners will understand that using loops is called iteration. They will be able to independently use loops to produce a piece of music   **Exceptional Progress:**   * Learners will be able to produce a program which changes the piece of music that is being played through responding to user input |
| Links to KS3 Programme of Study | |
| * Use two or more programming languages, at least one of which is textual, to solve a variety of computational problems | |
| Key Concepts | Key Words |
| * The use of a repeating sequence is called iteration * The use of loops can help to ensure that code is written efficiently | * Iteration * Loops * Efficiency |
| Differentiation | Resources |
| More able learners should add extra functionality to their core composition through adding blocks which respond to user input. This will combine the concepts of sequence, selection and iteration | * Lesson 10 ppt * Lesson 10 Making Music Worksheet * MakeCode website * musicFunk.hex * musicTune.hex |
| Lesson Flow | |
| * Using the lesson 10 ppt introduce the concept of loops. Highlight that quite often repetitive processes need to be carried out. Using a loop rather than writing out multiple lines of code that are the same allows learners to make programs that are more efficient and quicker to write. * Introduce the term ‘iteration’. In computer science this is the term that we use for a loop. * Discuss the sample musical program and demonstrate what it sounds like. This will generate excitement. Learners should then work through the tutorial to produce the piece of music. If you are using a micro:bit v2 the sound will be played by the built in speaker. If you are using v1 you will need to connect an exeternal speaker or headphones. Alternatively the sound could be played on the computer by just using the on screen emulator rather than the physical micro:bit. * Once the tutorial has been completed learners can work on their own compositions. More capable learners should be encouraged to produce compositions which respond to user input. * During the final 10 minutes of the lesson introduce students to the project which they will be completing over the next two weeks, the micro:pet. Use the ppt to support this discussion. Introduce learners to the design template which they will be completing in the next lesson. | |
| Making | |
| There are no making activities in this lesson. | |