# Lesson 13 – Iteration

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| 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 |
| 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 13 ppt * Lesson 13 Making Music Worksheet * MakeCode website |
| Lesson Flow | |
| * Using the lesson 13 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 * 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. | |
| Making | |
| There are no making activities in this lesson. | |