Content - Big ideas

Huge Question: What is a computer and how do they work?

Big question: How do computers Store Data?

Learning outcome: *Students will be able to ….*

- **1.1 Understand how computers use binary to represent data**
  - **Convert between Decimal and Binary numbers**
  - **Convert between Hexadecimal and Binary numbers**
  - **Do simple binary addition**
- **1.2 Understand how text and images are stored as binary**
  - **Make use of Extended ASCII and alt codes.**

Big question: How do computers work?

Learning outcome: *Students will be able to ….*

- **1.3 Understand the role of input, output and storage devices**
- **1.4 Understand the role of software (both system and application software)**
- **1.5 Understand the difference between firmware and bootstrap software, and where they are used.**

Big question: How do computers work?

Learning outcome: *Students will be able to write simple programs using a scripted programming language. They will be able to sequence instructions to make things happen, respond to inputs, and output new information. They will be able to make use of loops and variables to write efficient code.*

- **2. Physical Programming (Python)**
  - Inputs and Outputs
  - Loops
  - Variables
  - Selection
  - Random Values
  - Moving a Turtle

Prior learning

Prior learning required
Experience of Block Programming (using the micro: bit & Scratch)
Understanding of what a computer is.

Global/IOM/Subject Links

Links to other subjects
Maths - algebra

Links to Global picture
Computers and Algorithms make much of our modern life operate, from Netflix recommendations to what we buy or the news we see.

Links to IOM
The Isle of Man has a thriving and growing Computing sector

Subject specific skills development

Problem Solving
Breaking down problems to identify a solution when programming

Algorithmic Design
Designing Sequences of Instructions when programming

Application of Skills
Using ICT skills to record and communicate there progress and understanding

Evaluating
Through considering the suitability of hardware for different tasks.