



The Mall School

Curriculum Guide

Computing – Spring Term

Year 5

Teachers: Mr Lang
Lessons: 1 x 80min
Homework: N/A

Introduction:

National Curriculum Program of Study

Using Raspberry Pi's to recognise that a range of digital devices can be considered to be a computer. Pupils to recognise and use a range of input and output devices. Pupils to use two 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. To understand the hardware and software components that make up computer systems, and how they communicate with one another and with other systems. To design, use and evaluate computational abstractions that model the state and behaviour of realworld problems and physical systems.

1. Getting Started with Raspberry Pi

Know the basic architectures of a computing device; Understand the difference between hardware and software; Be able to set up a Raspberry Pi, turn it on, load the graphical user interface, and navigate the desktop for the first time.

2. Sonic Pi

To make sounds by typing text into Sonic Pi; To loop a tune so that it repeats; What MIDI note numbers are and how to convert them to music notes; How to change the sounds by using different synths and samples; How to play two tunes at the same time using threads; To perform with Sonic Pi by live coding; How to add effects and use parameters to change the way notes sound; How to use randomisation within a composition.

3. Introduction to Python

Open the python shell; printing to the screen; working with numbers; introduction to loops; ceate a number guessing game; accepting input from a user.

4. Python programming environment IDLE to connect to Minecraft Pi

How to access Minecraft Pi and create a new world; how to use the Python programming environment IDLE to connect to Minecraft Pi; how to use the Minecraft Python API to post text to the chat window, find the player's coordinates, teleport and build structures; how to use variables to store IDs for different types of blocks; experimenting with placing different types of blocks with special attributes.

5. Physical Computing with Raspberry Pi

How to identify GPIO pins on a Raspberry Pi, and what the GPIO pins are used for; basic knowledge of different types of components; difference between inputs and outputs; connecting an LED with and without a breadboard; connecting a switch with and without a breadbread; controlling an LED in both ScratchGPIO and python; controlling a switch in both ScratchGPIO and python.

Resources:

All boys must bring their ICT/Computer Studies folder to each lesson:

Pencil, Rubber, Pencil Sharpener, 30cm Ruler, Colouring Pencils, Highlighter Pens, Glue Stick.