Space Adventures Computing Unit 2

Lesson 1 – Launch (advanced tech)

Curriculum Mapping (Computing KS2)

- use sequencing, selection and repetition in programs; work with variables and various forms of output
- use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs

Learning Objective
Code a complex animation of a rocket taking off using cloned sprites.

Prior Learning
Good knowledge of most KS2 coding techniques, familiarity with Scratch.

Introduction
Show pupils the ***U2L1 introduction.mp4 video.***
Using the prompts in the video, ask pupils to identify the steps in the program that make the rocket blast off and how the smoke behaves. (This can be done orally or written in rough, and is known as the algorithm).

Main Activity
Pupils use Scratch to create their own launch animation. They use variables to control the speed and countdown.
Show the class the ***U2L1 demonstration.mp4 video*** or how to access it on their own computers.
Hand out the ***U2L1 step by step.pdf*** guide or show pupils how to access it on their computers.
(Opening a second tab in the browser will allow pupils to switch between the help guide/video and their own work).

Extension Activity
Show pupils the activities on the ***U2L1 going further.pdf*** document. These include experimenting with aspects of the code and changing the way the smoke behaves.

Plenary
Ask pupils to try and explain what cloning (in coding) is. Explain that this is a graphics technique used to show multiple copies of an object. It is used in computer games and CGI (computer generated images) animation in films. Ask pupils to list films they have seen that use this technique (typically to draw lots of trees, multiple characters (eg Minions), explosions, smoke etc).

Notes
The whole program has two main parts - code for the rocket, and code for the smoke.
The rocket code starts by initialising (setting) the variables and the position, size and direction of the rocket. It then uses a loop to show the countdown from 10 to 1, before blast off. The program then uses a loop to gradually increase the value of the variable called speed. It then moves the rocket up, by the value of the speed variable. This makes it accelerate.

The engine smoke code then has two sections. The first short loop creates a new smoke sprite many times a second using the create clone command. The next part of the smoke code runs each time a smoke sprite is cloned. It starts by initialising the sprite (setting size, position etc) and giving it a random direction. A loop then moves the smoke sprite 20 times in a loop, making it move down and get smaller.
Finally each cloned smoke sprite gets deleted.