



Hopscotch Coding - Week 1 - 'Alphabet Writer'

Overview

In this first week pupils will be introduced to the basics of the Hopscotch interface as well as some key coding concepts/ words. The aim of this syllabus is to advance the skills learnt in the Scratch Jr course through the medium of game design, and therefore this first week will be spent learning to control **conditionals** and **variables**. The pupils will finish the lesson with a short animation/game in which a character draws different letters of the alphabet by moving. The lesson will be broken into segments that focus not only on the technical coding but also the theoretical mathematics of coding. As with any session the tutor must be practiced and have read up on all class materials. It is also worth mentioning that as this is the first lesson its structure is mostly work led by the tutor rather than independent work.

Learning Objectives

- To understand and be able to use the terms **Conditional**, **Variable** and **Debug**.
- To begin to develop both game design and coding skills with the use of the Hopscotch App.
- To be able to traverse a 2D plane on both the X and Y axis.

Tools needed

- 15 I pads

Starter Activity (10mins)

Before any activity commences with the iPads the tutor should post the keywords of the lesson on the board and give a brief explanation of their use in today's lesson e.g. **Conditional** - "When ... do ... ". Be sure to remind all of the pupils that they should use these words when discussing their work with either you or their peers. You will then introduce the Hopscotch app and its basic features. This should include an explanation of its two basic modes (play & edit) as well as how to add and delete characters. Finish this section by asking children to select their favourite character and place it on the left hand side of the screen...

Activity 1 - Moving on the horizontal plane (5 mins)

First introduce the class to the '**Game Starts**' conditional, and explain how this initiates any following code when the play button is tapped. This should be followed by the first variable, which will be **Move Forward**. Explain how all variables are colour coded depending on their purpose - movement is red. They should notice the number that follows the **Move Forward** variable and therefore explain that this relates to the units of movement (the screen is roughly 900 units wide and high). Once this has been tested i.e. **Debugged**, the tutor should introduce the more effective and useful replacement variable - **Change X By**.

Activity 2 - Understanding the X and Y plane and moving Up, Down, Left and Right (10 mins)

With the **Change X By** conditional loaded into their **Game Starts** conditional, the pupils should be quizzed on their knowledge of the horizontal and vertical plane. Once this has been covered the pupils must have left, right, up and downward movement explained to them i.e. the characters central position is always zero and to move right and up requires + numbers, while left and down requires - numbers. This may prove confusing however this is vital knowledge and will be repeated in the coming weeks so it is worth spending plenty of time on it. Using both the **Change X by** and **Change Y** by variables within the same **Game Starts** conditional, ask the pupils to move their character in a square on the screen.

Activity 3 - Drawing a Line and Moving Diagonally (10 mins)

Firstly, once the pupils have finished moving their character in a square the tutor should demonstrate the **leave a trail** variable (this will be how they successfully make their alphabet letters). Once this has been covered the tutor should explain how to move the character diagonally. If there are only **Change X By** and **Change Y By**, we must combine the two to get a diagonal line. The answer is therefore to use two simultaneous **Game Starts** conditionals with equal X and Y movement. This should teach the pupils about timing structures and further about the nature of **conditionals**. Finish the explanation by getting the pupils to draw a vertical line in both directions.

Activity 3 - Alphabet Writer (25 mins)

The final activity of this lesson will be predominantly led by the students as they attempt to draw as many letter shapes as possible. Offer suggestions on the board, and explain that some will be easier than others. They should aim to create 3 letters, but if they are able to do more then allow them to continue. Before the end of the lesson invite a selection of pupils up to showcase their work.

National Curriculum:

Coding: Write a simple algorithm whilst commanding sprites.

Coding: Debugging and checking accuracy of game.

Coding: Create a short game/animation using a simple visual programming language.

Coding: Beginning understand basic computing and mathematical concepts and vocabulary.

General: Numeracy, Reasoning Skills, Creative Design