

Year 4 Scheme of Learning: Computing

Year 4 - Coding

Lesson 1	
Learning Objective	To use a sketch or storyboard to represent a program design and algorithm.
Declarative Knowledge	• To know how to explore different object types in 2code. • To know how to use a background and objects to create a scene. • To know how to plan an algorithm and use 2Code to program it.
Procedural Knowledge	Tinkering - Revisit programming language. - Identify successes and failures in their tinkering.
Key Vocabulary	Algorithm, code blocks, background, object, implement, predict, run, properties, event, key, debug/debugging, action.

Lesson 2	
Learning Objective	To introduce the If/else statement and use it in a program and to create a variable.
Declarative Knowledge	• To know how to create a program that includes an IF statement. • To know how to interpret a flowchart that depicts an IF statement.
Procedural Knowledge	Tinkering - Revisit programming language. - Identify successes and failures in their tinkering. Creating - Plan, design and make a project. Debugging - Code and test approach.
Key Vocabulary	Algorithm, code blocks, background, object, implement, predict, run, properties, event, key, debug/debugging, action, selection, 'if' statements, flowchart.

Lesson 3	
Learning Objective	To use the Repeat Until command to make objects repeat actions
Declarative Knowledge	• To know how to make use of the X and Y properties of objects when coding. • To know how to create a program that includes an IF statement.
Procedural Knowledge	Tinkering - Revisit programming language. - Identify successes and failures in their tinkering.
Key Vocabulary	Algorithm, code blocks, background, object, implement, predict, run, properties, event, key, debug/debugging, action, selection, 'if' statements, flowchart, co-ordinates, command, execute .

Lesson 4	
Learning Objective	To make timers and counting machines using variables to print a new number to the screen every second.
Declarative Knowledge	- To know how to read codes that includes repeat unit and IF/ELSE and explain how it works. - To know how to create a program that includes an IF/ELSE statement. - To know how to interpret a flowchart that depicts and IF/ ELSE statement.
Procedural Knowledge	Tinkering - Revisit programming language. - Identify successes and failures in their tinkering. Debugging - Use logical reasoning to detect and correct errors. - Identify whether the bug lies in the algorithm or code.
Key Vocabulary	Algorithm, code blocks, background, object, implement, predict, run, properties, event, key, debug/debugging, action, selection, 'if' statements, flowchart, co-ordinates, command, execute, repeat, 'IF/Else' statement, inputs.

Lesson 5	
Learning Objective	To investigate control by creating a simulation.
Declarative Knowledge	- To know how to explain what a variable is in programming. - To know how to create and use variables when programming.
Procedural Knowledge	Creating - Plan, design and make a project. Debugging – code and test approach.
Key Vocabulary	Algorithm, code blocks, background, object, implement, predict, run, properties, event, key, debug/debugging, action, selection, 'if' statements, flowchart, co-ordinates, command, execute, repeat, 'IF/Else' statement, inputs, variable.

Lesson 6	
Learning Objective	To know what decomposition and abstraction are in computer science.
Declarative Knowledge	- To know how to read code that includes repeat until and IF/ ELSE and explain how it works. - To know how to create a program that includes and IF/ELSE statement. - To know how to interpret a flowchart that depicts and IF/ELSE statement.
Procedural Knowledge	Tinkering - Revisit programming language. - Identify successes and failures in their tinkering. Debugging - Use logical reasoning to detect and correct errors.
Key Vocabulary	Algorithm, code blocks, background, object, implement, predict, run, properties, event, key, debug/debugging, action, selection, 'if' statements, flowchart, co-ordinates, command, execute, repeat, 'IF/Else' statement, inputs, variable, alert, prompt.

Year 4 - Making Music

Lesson 1	
Learning Objective	To identify and discuss the main elements of music: Pulse, Rhythm, Tempo, Pitch, Texture.
Declarative Knowledge	- To know how to appropriately use musical language to discuss a piece of music. - To know how to identify sounds in a piece of music. - To know how to explain how a piece of music makes them feel.
Procedural Knowledge	Tinkering – investigate new software. Debugging – code and test approach.
Key Vocabulary	Pulse, rhythm, tempo, pitch, texture.

Lesson 2	
Learning Objective	To understand and experiment with rhythm and tempo.
Declarative Knowledge	- To know how to identify and recall a simple rhythm. - To know how to explain what tempo is, and how changing it can change the mood of a piece of music. - To know how to create their own simple rhythm using Busy Beats.
Procedural Knowledge	Tinkering – identify successes and failures in their tinkering. Debugging – code and test approach.
Key Vocabulary	Pulse, rhythm, tempo, pitch, texture, BPM (beats per minutes).

Lesson 3	
Learning Objective	To create a melodic phrase.
Declarative Knowledge	- To know how to show an understanding of melody. - To know how to create a simple melodic pattern using 2Sequence and Busy Beats. - To know how to use a variety of notes, experimenting with pitch.
Procedural Knowledge	Creating - Plan, design and make a project.
Key Vocabulary	Pulse, rhythm, tempo, pitch, texture, BPM (beats per minutes), synths, harmonious.

Lesson 4	
Learning Objective	To compose a piece of electronic music.
Declarative Knowledge	- To know how to explore and understand how music is created. - To know how to experiment with pitch, rhythm, and melody to create a piece of house music on Busy Beats.
Procedural Knowledge	Creating - Plan, design and make a project.
Key Vocabulary	Pulse, rhythm, tempo, pitch, texture, BPM (beats per minutes), synths, harmonious, melody.

Year 4 - Animation

Lesson 1	
Learning Objective	To decide what makes a good, animated film or cartoon and discuss favourite animations.
Declarative Knowledge	- To know how to put together a simple animation using paper to create a flick book. - To know how to identify animation frames.
Procedural Knowledge	Tinkering – investigate new software.
Key Vocabulary	Animation, frame, FPS (frame per second), pause.

Lesson 2	
Learning Objective	To find out how 2Animate animations can be created using technology.
Declarative Knowledge	To know how to made a simple animation using 2Animate.
Procedural Knowledge	Tinkering – investigate new software.
Key Vocabulary	Animation, frame, FPS (frame per second), pause, onion skinning.

Lesson 3	
Learning Objective	To learn how to add background and sounds to animations.
Declarative Knowledge	- To know what the Onion Skin tool does in animation. - To know how to use the Onion Skin tool to create an animated image. - To know how to use backgrounds and sounds to make more complex and imaginative animations.
Procedural Knowledge	Creating - Plan, design and make a project. Debugging – code and test approach.
Key Vocabulary	Animation, frame, FPS (frame per second), pause, onion skinning, background.

Lesson 4	
Learning Objective	To look at 'stop motion' animation.
Declarative Knowledge	- To know what 'stop motion' animation is and how it is created. - To know how to have used ideas from existing 'stop motion' films to recreate their own animation.
Procedural Knowledge	Creating - Plan, design and make a project. Debugging – code and test approach.
Key Vocabulary	Animation, frame, FPS (frame per second), pause, onion skinning, background, stop motion.

Lesson 5	
Learning Objective	To access our animations as a class.
Declarative Knowledge	To know how to have shared their animations and commented on each other's work using display boards and blogs in Purple Mash.
Procedural Knowledge	Collaborating - Sharing with others, what they have learned.
Key Vocabulary	Animation, frame, FPS (frame per second), pause, onion skinning, background, stop motion, blogs.