

## KS3 Scheme of Work: Control / Scratch

The first 3 lessons are about skill-building. The last 3 allow students to apply their knowledge and build a project from *scratch*. Students create animations and games using control software.

### Overview

Version:	1
Author:	Laurence James
Contributors:	
Length:	6 lessons ( <i>could be spreads across more</i> )
Theme:	Control: Building animations and/or computer game
Software:	Scratch (MOST), Flash (SOME), Microsoft Office Apps to record progress.
More Info:	<a href="http://scratch.mit.edu">http://scratch.mit.edu</a> , <a href="http://learnscratch.org">http://learnscratch.org</a>
Assessment:	APP (AF2: Sequencing, AF1: Planning/Evaluating)

### Credits

Tutorial ideas	Scratch.mit.edu
Public domain clipart	Clickr.com
Lightbot	Coolio-Niato (AKA Danny Yaroslavski)

### Prerequisites

Students should be able to:

- ★ Manage folders and files
- ★ Use Publisher and Word to edit and save files
  - Editing the 'header' of a Word document
- ★ Take screen prints and crop them (I suggest using Irfanview – freely downloadable).

### Teacher Set up

#### Shortcuts

There is a folder full of shortcuts – the location of these might need to be updated depending on the network setup. This will be done by your IT admin guru.

#### Fonts

To get the presentation and word documents looking as desired, install the fonts in the 'fonts' folder (copy the files to c:\windows\fonts).

#### Props

Lesson 1:	Blindfold ( <i>optional activity</i> )
Lesson 3:	Laminated cards (see ProblemsAndSolutions.doc)

#### Classroom Display (optional)

Keywords.doc, Poster.pub, Poster-Scratch Club.pub

### G&T – Talented Students

Refer to a separate Flash Project document. Students should also show proficiency at concepts introduced in this unit.

## APP – Assessing Student Progress

Refer to page 1 of the student diary.

Students fill out several additional electronic worksheets throughout this unit.

Level	AF1: Planning, Developing, Evaluating	AF2: Sequencing Instructions
7	<input type="checkbox"/> Scope the information flow through the system <input type="checkbox"/> Devise and apply success criteria to ensure a quality solution, refine work as it progresses.	<input type="checkbox"/> Develop your own, complete project that solves a problem efficiently
6	<input type="checkbox"/> Plan & develop solutions efficiently <input type="checkbox"/> Use criteria and feedback to improve the quality of your work	<input type="checkbox"/> Create efficient sequences Fully test your sequences and reduce 'bugs'
5	<input type="checkbox"/> Use a combination of software to implement your plan <input type="checkbox"/> Use criteria to evaluate your work, suggest improvements	<input type="checkbox"/> Create YOUR OWN accurate sequences
4	<input type="checkbox"/> Implement a plan <input type="checkbox"/> Evaluate the quality of your work	<input type="checkbox"/> Refine and adapt a sequence <input type="checkbox"/> Explain how your sequence works
3	<input type="checkbox"/> Plan how to solve a problem <input type="checkbox"/> Comment on the success of your project	<input type="checkbox"/> Create a sequence

## SEAL – Social & Emotional Aspects of Learning

Lessons with particular emphasis on SEAL objectives:

Lesson	Self-awareness	Managing Feelings	Motivation	Empathy	Social Skills
1		<input checked="" type="checkbox"/> When tasks don't go as planned	<input checked="" type="checkbox"/> Prize is going to be awarded for best project(s)/ performance(s). Completing tutorials gives self-satisfaction and motivation for more.		<input checked="" type="checkbox"/> Students help each other complete tasks
2		<input checked="" type="checkbox"/> When tasks don't go as planned	<input checked="" type="checkbox"/> Completing tutorials gives self-satisfaction and motivation for more.		<input checked="" type="checkbox"/> Students help each other complete tasks
3		<input checked="" type="checkbox"/> When tasks don't go as planned	<input checked="" type="checkbox"/> Completing tutorials gives self-satisfaction and motivation for more.		<input checked="" type="checkbox"/> Peer-help. Group task responding to comments "maintaining player interest"
4		<input checked="" type="checkbox"/> When tasks don't go as planned	<input checked="" type="checkbox"/> Self-motivated through choice of project		<input checked="" type="checkbox"/> Peer-help Group task – solving the "gold collector" level.
5		<input checked="" type="checkbox"/> When tasks don't go as planned	<input checked="" type="checkbox"/> Self-motivated through choice of		<input checked="" type="checkbox"/> Feedback to others/peer-

			project		assessment
6		✓ When tasks don't go as planned, or when someone else wins a prize	✓ Prize is going to be awarded for best project(s)	✓ If projects don't go to plan...emphasis with others.	✓ Feedback to others/peer-assessment

## PLTS – Personal learning and thinking skills

Lessons with particular emphasis on competencies:

Lesson	Independent learners	Creative thinkers	Reflective learners	Team Workers	Self-managers	Global citizens
1	✓ Students use additional learning resources and experiment with different sequence blocks	✓ Students can create their own scripts	✓ Students maintain a project diary			
2	✓ Students use additional learning resources and experiment with different sequence blocks	✓ Students can create their own scripts	✓ Students maintain a project diary			
3	✓ Students use additional learning resources and experiment with different sequence blocks	✓ Students can create their own scripts	✓ Students maintain a project diary	✓ Maintaining player interest team task		
4	✓ Students use additional learning resources and experiment with different sequence blocks	✓ Students choose their own project and can unleash their creativity	✓ Students maintain a project diary	✓ Gold collector team task	✓ Manage own project/time accordingly	
5	✓ Students use additional learning resources and experiment with different sequence blocks	✓ Students use their creativity to work on their own project	✓ Students maintain a project diary		✓ Manage own project/time accordingly	
6	✓ Students use additional learning resources and experiment with different sequence blocks	✓ Students use their creativity to work on their own project	✓ Students maintain a project diary and evaluate their project		✓ Manage own project/time accordingly, and reflect performance.	

AF	Week	Learning Objectives	Possible Teaching Activities	Differentiation (SEN & G&T)	Learning Outcomes/ Final Project	Assessment Opportunities (!) & Resources (⇒)	APP criteria being assessed
AF2	1	<p><b>LESSON 1</b></p> <p><b>Must:</b> Select control blocks to create animations</p> <p><b>Should:</b> Experiment by modifying “blocks” Use blocks appropriately</p> <p><b>Could:</b> Create your own sequence of instructions Use blocks efficiently</p>	Refer to PowerPoint and notes	<p><b>SEN</b> – Might need support to create folders and initially locate the required documents.</p> <p>The tutorials are designed to be ‘visual’, however, help students with reading difficulties to work through them..</p> <p>Allow mainly use of screenshots and bullet points in the project diary.</p> <p><b>G&amp;T</b> – encourage to adapt and create own sequences.</p> <p><b>Level 7/8 students can attempt the Flash project independently.</b></p> <p><b>These lessons are primarily differentiated by outcome.</b></p>	<p>✓ Students should be able to explain some of the different ‘blocks’ available in Scratch through their completed project diary.</p> <p>✓ Completed interactive butterfly animation</p> <p>✓ Completed break dancer animation with background</p> <p>✓ Completed ‘definitions1.doc’</p>	<p>! Student electronic worksheets ⇒ Definitions1.doc completed worksheet ⇒ Students maintain project diary ⇒ Thumbs up/down to gauge how well students took to lesson.</p>	<p><b>APP: AF2:</b> Sequencing Instructions</p> <p><b>PLTS:</b> <u>Independent learners:</u> Students use additional learning resources and experiment with different sequence blocks</p> <p><u>Creative Thinkers</u> - Students can create their own scripts</p> <p><u>Reflective Learners</u> - Students maintain a project diary</p> <p><b>SEAL</b> <u>Manage Feelings</u> – when tasks don’t go as planned.</p> <p><u>Motivation</u> – prize is going to be awarded for best project(s)/performance(s). Completing tutorials gives self-satisfaction and motivation for more.</p> <p><u>Social Skills</u>- students help each other complete tasks</p>

AF	Week	Learning Objectives	Possible Teaching Activities	Differentiation (SEN & G&T)	Learning Outcomes/ Final Project	Assessment Opportunities (!) & Resources (⇒)	APP criteria being assessed
AF2	2	<p><b>LESSON 2</b></p> <p><b>Must:</b> Define what 'selection' means</p> <p><b>Should:</b> Define what 'selection' and 'iteration' mean Select blocks appropriately</p> <p><b>Could:</b> Create your own sequence of instructions to include 'selection' and 'iteration' blocks</p>	Refer to PowerPoint and notes	<p><b>SEN</b> – The tutorials are designed to be 'visual', however, help students with reading difficulties to work through them.</p> <p>Allow mainly use of screenshots and bullet points in the project diary.</p> <p><b>G&amp;T</b> – encourage to adapt and create own sequences.</p>	<ul style="list-style-type: none"> <li>✓ Completed bouncing ball</li> <li>✓ Completed Pong game</li> <li>✓ Students to define terms in their project diary.</li> </ul>	<p>! Student electronic worksheets</p> <p>⇒ Interactive activities allow self-assessment</p> <p>⇒ Students maintain project diary</p>	<p><b>APP:</b> <u>AF2</u>: Sequencing Instructions</p> <p><b>PLTS:</b> <u>Independent learners</u>: Students use additional learning resources and experiment with different sequence blocks</p> <p><u>Creative Thinkers</u> - Students can create their own scripts</p> <p><u>Reflective Learners</u> - Students maintain a project diary</p> <p><b>SEAL:</b> <u>Manage Feelings</u> – when tasks don't go as planned.</p> <p><u>Motivation</u> Completing tutorials gives self-satisfaction and motivation for more.</p> <p><u>Social Skills</u>- students help each other complete tasks</p>

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AF2	3	<p><b>LESSON 3</b></p> <p><b>Must:</b> Give an example of a logical operator Use 'operator' and 'broadcast' blocks</p> <p><b>Should:</b> Explain how logical operators can be used Explain how to broadcast an event</p> <p><b>Could:</b> Explain why event broadcasting is useful Develop your own game idea</p>	Refer to PowerPoint and notes	<p><b>SEN</b> – 'Maintaining player interest' - students can work in groups of 2-3 and support each other.</p> <p>The tutorials are designed to be 'visual', however, help students with reading difficulties to work through them.</p> <p>Allow mainly use of screenshots and bullet points in the project diary.</p> <p><b>G&amp;T</b> – encourage to adapt and create own sequences.</p>	<p>✓ Complete game 'ball drop'.</p> <p>✓ Completed 'operators.doc' (SOME)</p> <p>✓ Updated project diary</p>	<p>! Student electronic worksheets</p> <p>⇒</p> <p>⇒</p> <p>⇒</p> <p>⇒</p>	<p><b>APP:</b> <u>AF2</u>: Sequencing Instructions</p> <p><b>PLTS:</b> <u>Independent learners</u>: Students use additional learning resources and experiment with different sequence blocks</p> <p><u>Creative Thinkers</u> - Students can create their own scripts</p> <p><u>Reflective Learners</u> - Students maintain a project diary</p> <p><u>Team workers</u> - Maintaining player interest team task.</p> <p><b>SEAL:</b> <u>Manage Feelings</u> – when tasks don't go as planned.</p> <p><u>Motivation</u> Completing tutorials gives self-satisfaction and motivation for more.</p> <p><u>Social Skills</u>- students help each other complete tasks, particularly "maintaining player interest"</p>

AF	Week	Learning Objectives	Possible Teaching Activities	Differentiation (SEN & G&T)	Learning Outcomes/ Final Project	Assessment Opportunities (!) & Resources (⇒)	APP criteria being assessed
AF1, 2	4	<p><b>LESSON 4</b></p> <p><b>Must:</b> Explain the term 'iteration' Select a suitable project</p> <p><b>Should:</b> Produce an outline project plan Begin to make your project</p> <p><b>Could:</b> Devise success criteria for your project</p>	Refer to PowerPoint and notes	<p><b>SEN</b> – Allow students to work in groups of 2-3 to complete the 'gold collector' task.</p> <p>Encourage to choose the easiest project option, that is, the story or poem set to an animation. There is a tutorial on this.</p> <p>Students can complete the project plan document by using bullet points – or complete certain sections according to ability.</p> <p>Support students to select appropriate blocks.</p> <p><b>G&amp;T</b>- should be selecting the most challenging project – that is, creating their own game that is possible to complete given time constraints</p>	<p>✓ 'gold collector' document explaining why programs use iteration (AKA loops, repeats).</p> <p>✓ Completed 'project choice' worksheet.</p> <p>✓ Project plan – mostly filled out</p> <p>✓ Updated project diary</p> <p>✓ Started work on own Scratch project</p>	<p>! Student electronic worksheets</p> <p>⇒</p> <p>⇒</p> <p>⇒</p>	<p><b>APP:</b> <u>AF2</u>: Sequencing Instructions <u>AF1</u>: Planning</p> <p><b>PLTS:</b> <u>Independent learners</u>: Students use additional learning resources and experiment with different sequence blocks</p> <p><u>Creative Thinkers</u> - Students can create their own scripts</p> <p><u>Reflective Learners</u> - Students maintain a project diary</p> <p><u>Team workers</u> - Gold collector task</p> <p><u>Self Managers</u> - Manage own project/time accordingly</p> <p><b>SEAL:</b> <u>Manage Feelings</u> – when tasks don't go as planned.</p> <p><u>Motivation</u> Students can choose their own creative project.</p> <p><u>Social Skills</u>- students help each other complete tasks, particularly through solving "gold collector"</p>

AF	Week	Learning Objectives	Possible Teaching Activities	Differentiation (SEN & G&T)	Learning Outcomes/ Final Project	Assessment Opportunities (!) & Resources (⇒)	APP criteria being assessed
AF2	5	<p><b>LESSON 5</b></p> <p><b>Must:</b> Update your project plan Make your project by creating sequences</p> <p><b>Should:</b> Refine and adapt your sequences Explain how your sequences work</p> <p><b>Could:</b> Use a combination of software tools (e.g. graphics software to make sprites) Develop efficient sequences</p>	Refer to PowerPoint and notes	<p><b>SEN</b> – Help students complete their projects accordingly. Those completing the basic story/animation can use a given tutorial document to help.</p> <p><b>G&amp;T</b> – Create own project from scratch</p>	<ul style="list-style-type: none"> <li>✓ Project plan (updated)</li> <li>✓ Updated project diary</li> <li>✓ Continued work on own Scratch project</li> </ul>	<p>! Student electronic worksheets</p> <p>⇒ .</p> <p>⇒</p>	<p><b>APP:</b> <u>AF2</u>: Sequencing Instructions</p> <p><b>PLTS:</b> <u>Independent learners</u>: Students use additional learning resources and experiment with different sequence blocks</p> <p><u>Creative Thinkers</u> - Students can create their own scripts</p> <p><u>Reflective Learners</u> - Students maintain a project diary</p> <p><u>Self Managers</u> = Manage own project/time accordingly</p> <p><b>SEAL:</b> <u>Manage Feelings</u> – when tasks don't go as planned.</p> <p><u>Motivation</u> Students can choose their own creative project.</p> <p><u>Social Skills</u>- students help each other complete tasks.</p>



AF	Week	Learning Objectives	Possible Teaching Activities	Differentiation (SEN & G&T)	Learning Outcomes/ Final Project	Assessment Opportunities (!) & Resources (⇒)	APP criteria being assessed
AF AF1, 2	6	<p><b>LESSON 6</b></p> <p><b>Must:</b> Create sequences for your project Comment on the success of your project</p> <p><b>Should:</b> Refine and adapt your sequences Explain how your sequences work</p> <p><b>Could:</b> Use a combination of software tools (e.g. graphics software to make sprites) Develop efficient sequences</p>	Refer to PowerPoint and notes	<p><b>SEN</b> - Help students complete their projects accordingly. Those completing the basic story/animation can use a given tutorial document to help.</p> <p><b>G&amp;T</b> – Create own project from scratch</p>	<ul style="list-style-type: none"> <li>✓ Completed project (as complete as can be)</li> <li>✓ Completed evaluation document</li> <li>✓ Updated project diary</li> </ul>	<p>! Student electronic worksheets</p> <p>⇒ Peer-assessment through 'feedback.doc'</p> <p>⇒ Evaluation.doc</p>	<p><b>APP:</b> <u>AF2</u>: Sequencing Instructions <u>AF1</u>: Evaluating</p> <p><b>PLTS:</b> <u>Independent learners</u>: Students use additional learning resources and experiment with different sequence blocks</p> <p><u>Creative Thinkers</u> - Students can create their own scripts</p> <p><u>Reflective Learners</u>- Students maintain a project diary</p> <p><u>Self Managers</u> - Manage own project/time accordingly</p> <p><b>SEAL:</b> <u>Manage Feelings</u> – when tasks don't go as planned.</p> <p><u>Motivation</u> - Students can choose their own creative project.</p> <p><u>Empathy</u> – Emphasis with others if projects don't go to plan, or win prizes.</p> <p><u>Social Skills</u>- students help each other complete tasks.</p>