purple mash

# Computing Scheme of Work Overview Year 5

#### **Contents**

Introduction	3
Linking the Lessons to Curriculum Objectives	3
Differentiation	3
Adapting and Refining the Scheme for your School	4
Crash Courses	5
Year 5 Whole Year Overview	6
Year 5 Unit Overview	7
Unit 5.1 – Coding	7
Unit 5.2 – Online Safety	
Unit 5.3 - Spreadsheets	
Unit 5.4 – Databases	9
Unit 5.5 – Game Creator	10
Unit 5.6 – 3D Modelling	11
Unit 5.7 – Concept Maps	11
Unit 5.8 – Word Processing (with Microsoft Word)	12
Unit 5.8 – Word Processing (with Google Docs)	13
English National Curriculum Objectives (Key Stage 2)	15
Welsh Digital Competence Framework	
Northern Ireland Levels of Progression and Desirable Features	
Scottish Curriculum for Excellence (Second Level)	

## Introduction

This document contains an overview of the units included in the Purple Mash Computing Scheme of Work for Year 5.

For detailed lesson plans and other information, see the documents for the individual units

Most lessons assume that children are logged onto Purple Mash with their own individual usernames and passwords, so their work will be saved in their own folders automatically and can be easily reviewed and assessed by the class teacher. If children have not used and logged onto Purple Mash before then they will need to spend some time before starting these lessons, learning how to do this. Children can be supported by having their printed logon cards (produced using Create and Manage Users) to hand.

Lesson plans also make use of the facility within Purple Mash to set activities for pupils which they can then complete and hand-in online (2Dos). This enables you to assess their work easily as well as distribute resources to all pupils. If children have not opened 2Dos before then they will need more detailed instructions about how to do this. A teacher's guide to 2Dos can be found in the teacher's section: 2Dos Guide.

If you are currently using a single login per class or group and would like to set up individual logins yourself, then please see our guide to doing so at <u>Create and Mange Users</u>. Alternatively, please contact support at <a href="mailto:support@2simple.com">support@2simple.com</a> or 0208 203 1781.

To force links within this document to open in a new tab, right-click on the link then select 'Open link in new tab'.

## Linking the Lessons to Curriculum Objectives

At the end of this document you will find a breakdown showing how the units relate to the curricula of England, Wales, Northern Ireland and Scotland. Within each unit document is a section called Assessment Guidance with exemplars of how a child at emerging, expected and exceeding level of achievement could demonstrate this in their work through the unit. These statements could also be used for reporting.



This information can be used in association with the Purple Mash Data Dashboard to make and record judgements about children's outcomes and demonstrate progress over time.

For more information about the Data Dashboard see the Data Dashboard manual or view the videos within the Data Dashboard tool.

#### Differentiation

Where appropriate, guidance has been given on how to simplify tasks within lessons or challenge those who are ready for more stretching tasks.



# Adapting and Refining the Scheme for your School

In an ideal world, pupils would be able to complete all units; this provides a wide range of different technological experiences using a variety of tools. The overlaps between units serve to deepen understanding of computational concepts and provide opportunities for pupils to apply and extend understanding and make links in their knowledge and capabilities.

However, as a school, you might decide that you need to refine the scheme for your own purposes and needs, meaning that not all units can be covered. This section aims to help you to do this whilst still being confident in curriculum coverage.

Firstly, use the colour coding to pick and choose units that cover the three strands of computing content to ensure a spread of complimentary opportunities and skills and to ensure curriculum coverage. Ideally, balance these strands over the whole school so that pupils cover and revisit all areas.

Secondly, look for opportunities to incorporate the computational skills into other subjects. Resources could be adapted or created to match your topics. Here are some suggestions:

Units that link to the maths curriculum:

- 5.4 Databases
- 5.3 Spreadsheets

Units that could be part of English lessons:

5.8 Word Processing

Units that could easily be topic linked; resources will need to be adapted to have a topic theme: Any of the data handling units suggested in the maths section.

• 5.5 Game Creator

For lessons taught more discretely as computing such as Email (3.5) and Blogging (6.4), topic themes could still be used to double-up on objectives covered.

Online safety units can be part of RSE\PSHE lessons; there is a strong link between the learning objectives related to online safety with many of the online safety lessons aligning with RSE\PSHE objectives.

We have a stand-alone spreadsheet unit for Y6, this does not rely upon having completed the other spreadsheet units so might be another way to familiarise pupils with spreadsheets without including a spreadsheet unit in each year groups. In this case, we would advise including the use of spreadsheets and other data programs within maths where there is a curricular link.



#### **Crash Courses**

There are crash course units for Spreadsheets using 2Calculate and Coding using 2Code. Use these units instead of the standard Spreadsheets and Coding units if the children have not completed the prior year's spreadsheets or coding units. The crash courses are designed to enable children to catch up with the main features of the units from previous years and progress onto the standard units in the next year.

For example, if you are a school that starts in year 3 with children joining from different settings who have not used the Purple Mash Computing Scheme, you would start with the crash courses in year 3 for Coding and Spreadsheets and then children will be ready for the standard units for coding and spreadsheets in year 4.

Use these units if your school has just started using the scheme so children have not completed the prior year units.



# **Year 5 Whole Year Overview**

Predominant Area of Computing*			
Computer	Information	Digital	
Science	Technology	Literacy	

<sup>\*</sup>Most units will include aspects of all strands.

These units can be taught in any order to meet the needs of your wider curriculum.

These units can be taught i	,	ac c. /cai mac caimean
Unit 5.1	Unit 5.2	Unit 5.3
Coding	Online safety	Spreadsheets
Coding	Offilite Safety	Spreadsheets
Number of lessons – 6	Number of lessons – 3	Number of lessons – 6
Main Drawnana	Duna aura mana a Mandia wa	Dugguage
Main Programs –	<b>Programs</b> - Various	Programs –
2Code		2Calculate
Unit 5.4	Unit 5.5	Unit 5.6
Databases	Game Creator	3D Modelling
Number of lessons – 4		
ramber of lessons	Number of lessons – 5	Number of lessons – 4
	Number of lessons – 5	Number of lessons – 4
Programs –		
2Question,	Programs – 2DIY 3D	<b>Programs</b> – 2Design
2Investigate		and Make
Unit 5.7	Unit 5.8	
Concept Maps	Word processing	
Concept Maps		
	(with Microsoft Word	
Number of lessons – 4	or Google Docs)	
Programs – 2Connect	Number of Lessons – 8	
1 Tograms – 2 Connect	Tumber of Ecosoris - 0	
	Main manager MC	
	Main program – MS	
	Word or Google Docs	

# Year 5 Unit Overview

Unit 5.1 - Coding

Lesson	Title	Success Criteria
1	Coding Efficiently	<ul> <li>Children can use simplified code to make their programming more efficient.</li> <li>Children can use variables in their code.</li> </ul>
		Children can create a simple playable game.
2	Simulating a Physical System	<ul> <li>Children can plan an algorithm modelling the sequence of traffic lights.</li> <li>Children can select the right images to reflect the simulation they are making.</li> </ul>
		Children can use their plan to program the simulation to work in 2Code.
3	Decomposition and Abstraction	Children can make good attempts to break down their task into smaller achievable steps.
		Children recognise the need to start coding at a basic level of abstraction to remove superfluous details from their program that do not contribute to the aim of the task.
4 & 5	Friction and Functions	Children can create a program which represents a physical system.
		<ul> <li>Children can create and use functions in their code to make their programming more efficient.</li> </ul>
6	Introducing Strings	<ul> <li>Children can create and use strings in programming.</li> <li>Children can set/change variable values appropriately.</li> <li>Children know some ways that text variables can be used in coding.</li> </ul>

# Unit 5.2 - Online Safety

Lesson	Title	Success Criteria
1	Responsibilities and Support when Online	<ul> <li>Children critically about the information that they share online both about themself and others.</li> <li>Children know who to tell if they are upset by something that happens online.</li> <li>Children can use the SMART rules as a source of guidance when online.</li> </ul>
2	Protecting Privacy	<ul> <li>Children think critically about what they share online, even when asked by a usually reliable person to share something.</li> <li>Children have clear ideas about good passwords.</li> <li>Children can see how they can use images and digital technology to create effects not possible without technology.</li> <li>Children have experienced how image manipulation could be used to upset them or others even using simple, freely available tools and little specialist knowledge.</li> </ul>
3	Citing Sources	<ul> <li>Children can cite all sources when researching and explain the importance of this.</li> <li>Children select keywords and search techniques to find relevant information and increase reliability.</li> </ul>
4	Reliability	Children show an understanding of the advantages and disadvantages of different forms of communication and when it is appropriate to use each.

# Unit 5.3 - Spreadsheets

Lesson	Title	Su	ccess Criteria
1	Conversions of Measurements	•	Children can create a formula in a spreadsheet to
			convert m to cm.
		•	Children can apply this to creating a spreadsheet
			that converts miles to km and vice versa.
2	The Count Tool	•	Children can use a spreadsheet to work out which
			letters appear most often.
		•	Children can use the 'how many' tool.
3	Formulae Including the	•	Children can use a spreadsheet to work out the
	Advanced Mode		area and perimeter of rectangles.



		•	Children can use these calculations to solve a real- life problem.
4	Using Text Variables to Perform Calculations	•	Children can create simple formulae that use different variables. Children can create a formula that will work out how many days there are in x number of weeks or years.
5	Event Planning with a Spreadsheet	•	Children can use a spreadsheet to model a real-life situation and come up with solutions that can be practically applied.

## Unit 5.4 - Databases

Lesson	Title	Success Criteria
1	Searching a Database	<ul> <li>Children understand the different ways to search a database.</li> <li>Children can search a database to answer</li> </ul>
		questions correctly.
2	Creating a Class Database	Children can design an avatar for a class database.
		Children can successfully enter information into a class database.
	Creating a Topic Database	<ul> <li>Children can create their own database on a chosen topic.</li> <li>Children can add records to their database.</li> </ul>
3 & 4		<ul> <li>Children know what a database field is and can correctly add field information.</li> </ul>
		<ul> <li>Children understand how to word questions so that they can be effectively answered using a search of their database.</li> </ul>

## Unit 5.5 - Game Creator

Lesson	Title	Success Criteria
1	Setting the scene.	<ul> <li>Children can review and analyse a computer game.</li> <li>Children can describe some of the elements that make a successful game.</li> <li>Children can begin the process of designing their own game.</li> </ul>
2	Creating the Game Environment	<ul> <li>Children can design the setting for their game so that it fits with the selected theme.</li> <li>Children can upload images or use the</li> </ul>
		drawing tools to create the walls, floor, and roof.
	The Game Quest	Children can design characters for their game.
3		<ul> <li>Children can decide upon, and change, the animations and sounds that the characters make.</li> </ul>
4	Finishing and Sharing	Children can make their game more unique by selecting the appropriate options to maximise the playability.
		Children can write informative instructions for their game so that other people can play it.
5	Evaluation	Children can evaluate my their own and peers' games to help improve their design for the future.

# Unit 5.6 - 3D Modelling

Lesson	Title	Success Criteria
1	Introducing 2Design and Make	<ul> <li>Children know what the 2Design and Make tool is for.</li> <li>Children can explore the different viewpoints in 2Design and Make whilst designing a building.</li> </ul>
2	Moving Points	Children can adapt one of the vehicle models by moving the points to alter the shape of the vehicle while still maintaining its form.
3	Designing for a Purpose	Children can explore how to edit the polygon     3D models to design a 3D model for a purpose.
4	Printing and Making	<ul> <li>Children can refine one of their designs to prepare it for printing.</li> <li>Children can print their design as a 2D net and then created a 3D model.</li> <li>Children can explore the possibilities of 3D printing.</li> </ul>

# Unit 5.7 - Concept Maps

Lesson	Title	Success Criteria
1	Introduction to Concept Mapping	<ul> <li>Children can make connections between thoughts and ideas.</li> <li>Children can see the importance of recording concept maps visually.</li> </ul>
2	Using 2Connect	<ul> <li>Children understand what is meant by 'concept maps', 'stage', 'nodes' and 'connections.'</li> <li>Children can create a basic concept map.</li> </ul>
3	2Connect Story Mode	Children have used 2Connect Story Mode to create an informative text.
4	Collaborative Concept Maps	<ul> <li>Children have used 2Connect collaboratively to create a concept map.</li> <li>Children have used Presentation Mode to present their concept maps to an audience.</li> </ul>



# Unit 5.8 - Word Processing (with Microsoft Word)

Lesson	Title	Success Criteria
1	Making a Document from a Blank Page	<ul> <li>Children know what a word processing tool is for.</li> <li>Children will be able to create a word processing document altering the look of the text and navigating around the document.</li> </ul>
2	Inserting Images: Considering Copyright	<ul> <li>Children know how to add images to a word document.</li> <li>Children can edit images to reduce their file size.</li> <li>Children know the correct way to search for images that they are permitted to reuse.</li> <li>Children know how to attribute the original artist of an image.</li> </ul>
3	Editing Images in Word	<ul> <li>Children can edit their images within Word to best present them alongside text.</li> <li>Children understand wrapping of images and text.</li> </ul>
4	Adding the Text	<ul> <li>Children can add appropriate text to their document, formatting in a suitable way.</li> <li>Children can use a style set in Word.</li> <li>Children can use bullet points and numbering.</li> </ul>
5	Finishing Touches	<ul> <li>Children can add text boxes and shapes.</li> <li>Children can consider paragraph formatting such as line spacing, drop capitals.</li> <li>Children can add hyperlinks to an external website.</li> <li>Children can add an automated contents page.</li> </ul>
6	Presenting Information Using Tables	Children can add tables to present information.



		<ul> <li>Children can edit properties of tables including borders, colours, merging cells, adding and removing rows and columns.</li> <li>Children can add word art for a heading.</li> </ul>
7	Writing a Letter Using a Template	Children can use a Word template and edit it appropriately.
8	Presenting Information - Newspaper	Children can format a page using a combination of images, headers and columns.

# Unit 5.8 - Word Processing (with Google Docs)

Lesson	Title	Success Criteria
1	Making a Document from a Blank Page	<ul> <li>Children know what a word processing tool is for.</li> <li>Children will be able to create a word processing document, altering the look of the text and navigating around the document.</li> </ul>
2	Inserting Images: Considering Copyright	<ul> <li>Children know how to add images to a document.</li> <li>Children know the correct way to search for images that they are permitted to reuse.</li> <li>Children know how to attribute the original artist of an image.</li> </ul>
3	Editing Images	<ul> <li>Children can edit their images within Docs to best present them alongside text.</li> <li>Children understand wrapping of images and text.</li> </ul>
4	Adding the Text	<ul> <li>Children can add appropriate text to their document, formatting in a suitable way.</li> <li>Children can use styles to format a document.</li> <li>Children can use bullet points and numbering.</li> </ul>
5	Finishing Touches	<ul> <li>Children can add text boxes and shapes.</li> <li>Children can use page breaks, headers and footers.</li> <li>Children can add hyperlinks to places in the document and to an external website.</li> <li>Children can add an automated contents page.</li> </ul>



6	Sharing Files	<ul> <li>Children can share their documents with selected users.</li> <li>Children understand the different permissions when sharing in Google docs.</li> <li>Children can share using a share link.</li> </ul>
7	Presenting Information Using Tables	<ul> <li>Children can create a vector drawing in their document.</li> <li>Children can add tables to present information.</li> <li>Children can edit properties of tables including borders, colours, merging cells, adding and removing rows and columns.</li> </ul>
8	Writing a Letter Using a Template	<ul> <li>Children can use a template and edit it appropriately.</li> <li>Children can use the spelling and grammar tools built into Google docs.</li> <li>(Optional) Children know how to save a document as a pdf and the reasons for doing this.</li> <li>(Optional) Children know how to print their documents and can print ranges of pages.</li> </ul>

# **English National Curriculum Objectives (Key Stage 2)**

National Curriculum Objective	Strand	Units
Design, write and debug programs that accomplish specific goals, including	Computer Science	5.1
controlling or simulating physical systems; solve problems by decomposing them into smaller parts.		5.5
Use sequence, selection and repetition in programs; work with variables and various forms of input and output.	Computer Science	5.1
Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.	Computer Science	5.1
Understand computer networks, including the Internet; how they can provide multiple services, such as the World Wide Web; and the opportunities they offer for communication and collaboration.	Computer Science	5.2
Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.	Information Technology	Various Search technologies are taught more specifically in unit 4.7. Children will utilize this knowledge in many Internet based sessions in all areas of the curriculum.
Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information.	Information Technology	5.1     5.3       5.4     5.5       5.6     5.7       5.8
Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	Digital Literacy	5.2 and discussed in other units



# Welsh Digital Competence Framework

Strand	Element	Objective (Learners are able to):	Units Covered
Citizenship	Identity, image and reputation	Talk about the impact that the digital content created can have.	5.2
		Explain why it is important to discuss their use of technology with an adult.	5.2
		Maintain secure passwords on a regular basis applying the characteristics of strong passwords and refrain from using the same password more than once	5.2
	Health and well-being	Understand the advantages, disadvantages, permissions and purposes of altering an image digitally and the	5.2
		reasons for this.	5.5
	Digital rights, licensing and ownership	Cite all sources when researching and explain the importance of this.	5.2
Online behaviour a		Understand that photographs can be edited digitally and the rights and permissions associated with this.	5.2
	cyberbullying	Demonstrate appropriate online behaviour and apply a range of strategies to protect themselves and others from possible online dangers, bullying and inappropriate behaviour	5.2 Also as part of blogging about their work in various units.
Interacting and collaborating	Communication	Exchange online communication with other learners in one or more languages, making use of a growing range of available features.	Most Units Most children will successfully exchange online communication with other learners for a variety of



			purposes, using a range of Purple Mash tools such as 2Email, 2Blog, collaborative functionality e.g. 2Dos, 2Connect and 2Investige. Their skill at using more advanced features such as searching for 2Dos.
		Show an understanding of the advantages and disadvantages of different forms of communication and when it is appropriate to use each.	5.2
	Collaboration	Work with others to create an online collaborative project for a specific purpose, sharing and appropriately setting permissions for other	5.7
	Storing and sharing	Back up files to a second or third storage device	Through Blogging covered in several units. Using Purple Mash collaborative tools. Throughout Purple Mash, most children will understand that as well as files being stored in the cloud, they can also be downloaded and backed up locally, on a network or on a portable device.
		Search for a specific file	Most Units Most children will be able to use the search feature in the 'My Work' area to find files that meet a specific search criteria e.g. name of file, date (if used to name the file), subject etc.
		Upload files from a local drive to online storage.	Most Units Most children can use the image upload feature in various tools used for example: (Unit-5.4-2Investigate, 5.3- 2calculate, 5.6- 2DIY3D and 5.7-2connect) to upload an image from a local drive to Purple Mash.
Producing		Create a written plan using a template provided.	5.1     5.5       5.6     5.8



	Planning, sourcing and searching	Adjust keywords and search techniques to find relevant information; begin to reference sources used in their work; consider if the content is reliable.	5.2,	
	Creating	Combine a range of multimedia components to produce an appropriate outcome.	5.1 5.8	5.5
		Create, collect and combine a range of text, image,	5.1	5.5
		sound, animation and video for selected purposes.	5.1	5.3
	Evaluating and	Explain reasons for layout and content of own work	5.4	5.5
	improving		5.6	5.7
			5.8	
		Comment on reasons for layout	5.1	5.3
			5.4	5.5
			5.6	5.7
			5.8	
		Invite feedback/responses from others	5.1	5.3
			5.4	5.5
			5.6	5.7
			5.8	
		Create groups and share work between them to allow	Most Units	
		review of work.	Opportunities exis	st in all units for children to share
			work between the	em, both electronically or physically,
			and use this shari	ng as an opportunity to review
			others' work.	
Data and	Problem	Design simple sequences of instructions (algorithms)	5.1	
Computational	solving and	including the use of Boolean values (i.e. yes/no/true/false),		
Thinking	modelling	e.g. within the algorithm, demonstrate the correct use of		
		Boolean values giving an either/or response.		



Data and	Create, explore and analyse data sets, highlighting	5.3	
information	relationships within them	5.4	
literacy			



# Northern Ireland Levels of Progression and Desirable Features

	Objective	Units Covered
Explore	Access, select, interpret and research information from safe and reliable sources.	5.2
	Investigate, make predictions and solve problems through interaction with digital tools.	5.1, 5.3, 5.4, 5.7
Express	Create, develop, present and publish ideas and information responsibly using a range of digital media and manipulate a range of assets to produce multimedia.	
Exchange	Communicate safely and responsibly using a range of contemporary digital methods and tools, exchanging, sharing, collaborating and developing ideas digitally.	All units
Evaluate	Talk about, review and make improvements to work, reflecting on the process and outcome, and consider the sources and resources used, including safety, reliability and acceptability.	All units
Exhibit	Manage and present their stored work and showcase their learning across the curriculum, using ICT safely and responsibly.	All Units

Desirable Features	Units Covered
Desktop Publishing	5.5, 5.6, 5.7,5.8
Film and Animation	5.5
Interactive Design	5.1, 5.5
Managing data	5.4
Music and Sound	See unit 2.7
Online Communication	Use of 2dos and blogging as part of lessons
Presenting	5.5, 5.6, 5.7,5.8
Working with Images	5.5, 5.6,5.8

# Scottish Curriculum for Excellence (Second Level)

Technological developments in society	Units Covered
When exploring technologies in the world around me, I	5.5, 5.6
can use what I learn to help to design or improve my	
ideas or products.	
I can investigate how an everyday product has changed	
over time to gain an awareness of the link between	
scientific and technological developments	
Having analysed how lifestyle can impact on the	
environment and Earth's resources, I can make	
suggestions about how to live in a more sustainable	
way.	
I can investigate the use and development of renewable	
and sustainable energy to gain an awareness of their	
growing importance in Scotland or beyond.	
ICT to enhance learning	Units Covered
As I extend and enhance my knowledge of features of	By covering a variety of units.
various types of software, including those which help	
find, organise, manage and access information, I can	
apply what I learn in different situations.	
I can access, retrieve and use information from electronic	By covering a variety of units.
sources to support, enrich or extend learning in different	
contexts.	
Throughout all my learning, I can use search facilities of	By covering a variety of units.
electronic sources to access and retrieve information,	
recognising the importance this has in my place of	
learning, at home and in the workplace.	
I explore and experiment with the features and functions	By covering a variety of units.
of computer technology and I can use what I learn to	
support and enhance my learning in different contexts.	
I can create, capture and manipulate sounds, text and	By covering a variety of units.
images to communicate experiences, ideas and	
information in creative and engaging ways.	
Computing science contexts for developing	Units Covered
technological skills and knowledge	
I am developing my knowledge and use of safe and	5.2
acceptable conduct as I use different technologies to	
interact and share experiences, ideas and information	
with others	



Using appropriate software, I can work collaboratively to design an interesting and entertaining game which incorporates a form of control technology or interactive multimedia.	5.1, 5.5
Craft, design, engineering and graphics contexts for	Units Covered
developing technological skills and knowledge	
By applying my knowledge and skills of science and mathematics, I can engineer 3D objects which demonstrate strengthening, energy transfer and movement	5.6
Through discovery and imagination, I can develop and	5.3 Modelling real-life situations
use problem-solving strategies to construct models.	technologically, 5.6
Having evaluated my work, I can adapt and improve, where appropriate, through trial and error or by using feedback.	All units
I can use drawing techniques, manually or electronically,	45.5, 5.6
to represent objects or ideas, enhancing them using	
effects such as light, shadow and textures.	
Throughout my learning, I experiment with the use of colour to develop an awareness of the effects and impacts it can have.	5.6