purple mash

Computing Scheme of Work Overview Year 4

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Introduction

This document contains an overview of the units included in the Purple Mash Computing Scheme of Work for Year 4.

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

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 <u>Create and Manage Users</u>) 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 <u>support@2simple.com</u> 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 <u>Data Dashboard manual</u> or view the videos within the Data Dashboard tool.

Differentiation and SEND

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

We identify SEND as a broad term which can include physical, sensory, cognitive, behaviour and learning access needs, of which some children with SEND needs may be functioning at above expected national levels.



Within the Scheme of Work, it is expected that most lessons are differentiated by outcome and by the support and\or scaffolding children are given to meet their individual needs.

For each unit of work, there are three example assessment statements relating to pupil outcomes: Emerging; Expected and Exceeding. The emerging level outcomes would include children in the lowest 20% of attainment in this area.

For more able children there are extension tasks provided in many of the lessons.

We haven't provided SEND specific guidance except on the occasion where ability in other subjects might make accessing the computing content more difficult for some. For example, when mathematical understanding overlaps with work done on spreadsheets. We aim to ensure that most resources are accessible for most children e.g. by using voice recording in addition to text in quiz resources and by consideration of colour palette and illustrations.

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 Title 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:

4.3 Spreadsheets

Units that could be part of English lessons:

4.4 Writing for Different Audiences

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.

4.6 Animation

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.

Music topics could be incorporated into music lessons with a modelling of musical skills on both instruments and using the computer:

4.9 Making Music

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 4 Whole Year Overview

Predominant Area of Computing*			
Computer	Information	Digital	
Science	Technology	Literacy	

^{*}Most units will include aspects of all strands.

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

Unit 4.1 Coding Number of lessons – 6	Unit 4.2 Online safety Number of lessons – 4	Unit 4.3 Spreadsheets Number of lessons – 6
Main Programs – 2Code	Programs – Various	Programs – 2Calculate
Unit 4.4 Writing for different audiences Number of lessons – 5 Programs – 2Email, 2Connect, 2DIY	Unit 4.5 Logo Number of lessons – 4 Programs – Logo	Unit 4.6 Animation Number of lessons – 3 Programs – 2Animate
Unit 4.7 Effective Search Number of lessons – 3 Programs – Browser	Unit 4.8 Hardware Investigators Number of lessons – 2	Unit 4.9 Making Music Number of Lessons – 4 Main Program – Busy Beats

Year 4 Unit Overview

Unit 4.1 - Coding

Lesson	Title	Aims (Objectives)	Success Criteria
1	Design, Code, Test and Debug	 To review coding vocabulary and knowledge. To create a simple computer program. 	 Children can explore different object types in 2Code. Children can use a background and objects to create a scene. Children can plan an algorithm for their scene and use 2Code to program it.
2	IF Statements	 To begin to understand selection in computer programming. To understand how an IF statement works. 	 Children can create a program that includes an IF statement. Children can interpret a flowchart that depicts an IF statement.
3	Co-ordinates	 To understand how to use co- ordinates in computer programming. To understand how an IF statement works. 	 Children can make use of the X and Y properties of objects in their coding. Children can create a program that includes an IF statement.
4	Repeat Until and IF/ELSE Statements	 To understand the Repeat until command. To begin to understand selection in computer programming. To understand how an IF/ELSE statement works. 	 Children can read code that includes repeat until and IF/ ELSE and explain how it works. Children can create a program that includes an IF/ ELSE statement. Children can interpret a flowchart that depicts an IF/ ELSE statement.
5	Number Variables	 To understand what a variable is in programming. To use a number variable. 	 Children can explain what a variable is in programming. Children can create and use variables when programming.
6	Making a Playable Game	 To review vocabulary and concepts learnt in Year 4 Coding. To create a playable game. 	 Children can read code that includes repeat until and IF/ ELSE and explain how it works. Children can create a program that includes and IF/ ELSE statement. Children can interpret a flowchart that depicts an IF/ ELSE statement.

Unit 4.2 - Online Safety

Lesson	Title	Aims (Objectives)	Success Criteria
1	Going Phishing	 To understand how children can protect themselves from online identity theft. To understand that information put online leaves a digital footprint or trail and that this can aid identity theft. 	 Children know that security symbols such as a padlock protect their identity online. Children know the meaning of the term 'phishing' and are aware of the existence of scam websites. Children can explain what a digital footprint is and how it relates to identity theft. Children can give examples of things that
			they would not want to be in their digital footprint.
2	Beware Malware	To identify the risks and benefits of installing software including apps.	 Children can identify possible risks of installing free and paid for software. Children know that malware is software that is specifically designed to disrupt, damage, or gain access to a computer.
			Children know what a computer virus is.
3	Plagiarism	To understand that copying the work of others and presenting it as their own is called 'plagiarism' and to consider the consequences of plagiarism. To identify appropriate behaviour.	Children can determine whether activities that they undertake online, infringe another's' copyright. They know the difference between researching and using information and copying it
		 To identify appropriate behaviour when participating or contributing to collaborative online projects for learning. 	Children know about citing sources that they have used.
4	Healthy Screen-Time	 To identify the positive and negative influences of technology on health and the environment. To understand the importance of balancing game and screen time with other parts of their lives. 	 Children can take more informed ownership of the way that they choose to use their free time. They recognise a need to find a balance between being active and digital activities. Children can give reasons for limiting screen time.

Unit 4.3 - Spreadsheets

Lesson	Title	Aims (Objectives)	Success Criteria
1	Formula Wizard and Formatting Cells	 To explore how the numbers entered into cells can be set to either currency or decimal. To explore the use of the display of decimal places. To find out how to add formulae to a cell. 	 Children can use the number formatting tools within 2Calculate to appropriately format numbers. Children can add a formula to a cell to automatically make a calculation in that cell.
2	Using the Timer and Spin Buttons	 To explore how tools can be combined to use 2Calculate to make number games. To explore the use of the timer, random number and spin button tools. 	 Children can use the timer, random number and spin button tools. Children can combine tools to make fun ways to explore number.
3	Line Graphs	 To use the line graphing tool in 2Calculate with appropriate data. To interpret a line graph to estimate values between data readings. 	 Children can use a series of data in a spreadsheet to create a line graph. Children can use a line graph to find out when the temperature in the playground will reach 20°C.
4	Using a Spreadsheet for Budgeting	 To use the currency formatting tool in 2Calculate. To use 2Calculate to create a model of a real-life situation. 	 Children can make practical use of a spreadsheet to help them plan actions. Children can use the currency formatting in 2Calculate.
5	Exploring Place Value with a Spreadsheet	To use the functions of allocating value to images in 2Calculate to make a resource to teach place value.	 Children can allocate values to images and use these to explore place value. Children can use a spreadsheet made in 2Calculate to check their understanding of a mathematical concept.

Unit 4.4 - Writing for Different Audiences

Lesson	Title	Aims (Objectives)	Success Criteria
1	Font Styles	To explore how font size and style can affect the impact of a text.	 Children can look at and discuss a variety of written material where the font size and type are tailored to the purpose of the text. Children can use text formatting to make a piece of writing fit for its audience and purpose.
2 & 3	Using a Simulated Scenario to Produce a	To use a simulated scenario to produce a news report.	Children can role-play the job of a journalist in a newsroom.



News Report		 Children can interpret a variety of incoming communications and use these to build up the details of a story. Children can use the incoming information to write their own newspaper report.
Writing for a Campaign 4 & 5	To use a simulated scenario to write for a community campaign.	 Children can use 2Connect to mind-map ideas for a community campaign. Children can use these ideas to write a persuasive letter or poster as part of the campaign. Children can assess their texts using criteria to judge their suitability for the intended audience.

Unit 4.5 - Logo

Lesson	Title	Aims (Objectives)	Success Criteria
1	Introduction to 2Logo	 To learn the structure of the language of 2Logo. To input simple instructions in 2Logo 	 Children know what the common instructions are in 2Logo and how to type them. Children can follow simple 2Logo instructions to create shapes on paper. Children can follow simple instructions to create shapes in 2Logo.
2	Creating Letters using 2Logo	To use 2Logo to create letter shapes.	 Children can create 2Logo instructions to draw patterns of increasing complexity. Children understand the pu and pd commands. Children can write 2Logo instructions for a word of four letters.
3	Using the 'Repeat' Command in 2Logo	To use the Repeat command in 2Logo to create shapes.	 Children can follow 2Logo code to predict the outcome. Children can create shapes using the Repeat command. Children can find the most efficient way to draw shapes.
4	Using Procedures	To use and build procedures in 2Logo.	 Children can use the Procedure feature. Children can create 'flowers' or 'crystals' using 2Logo.



Unit 4.6 - Animation

Lesson	Title	Aims (Objectives)	Success Criteria
1	Animating an Object	 To decide what makes a good, animated film or cartoon and discuss favourite animations. To learn how animations are created by hand. To find out how 2Animate animations can be created in a similar way using technology. 	 Children have put together a simple animation using paper to create a flick book. Children understand animation frames. Children have made a simple animation using 2Animate.
2	2Animate Tools	 To learn about onion skinning in animation. To add backgrounds and sounds to animations. 	 Children know what the Onion Skin tool does in animation. Children can use the Onion Skin tool to create an animated image. Children can use backgrounds and sounds to make more complex and imaginative animations.
3	Stop Motion Animation	 Introducing 'stop motion' animation. To share animation the class blog. 	 Children know what 'stop motion' animation is and how it is created. Children have used ideas from existing 'stop motion' films to recreate their own animation. Children have shared their animations and commented on each other's work using display boards and blogs in Purple Mash.

Unit 4.7 - Effective Searching

Lesson	Title	Aims (Objectives)	Success Criteria
1	Using a Search Engine	To locate information on the search results page.	Children can structure search queries to locate specific information.
2	Use Search Effectively to Answer Questions	To use search effectively to find out information.	 Children have used search to answer a series of questions. Children have written search questions for a friend to solve.
3	Reliable Information Sources	To assess whether an information source is true and reliable.	Children can analyse the contents of a web page for clues about the credibility of the information.

Unit 4.8 - Hardware Investigators

Lesson	Title	Aims (Objectives)	Success Criteria
1	Hardware	To understand the different parts that make up a desktop computer.	 Children can name the different parts of a desktop computer. Children know what the function of the different parts of a computer is.
2	Parts of a Computer	To recall the different parts that make up a computer.	Children have created a leaflet to show the function of computer parts.

Unit 4.9 – Making Music

Lesson	Title	Aims (Objectives)	Success Criteria
1	Understanding Music	To identify and discuss the main elements of music: Pulse, Rhythm, Tempo, Pitch, Texture	 Children can use appropriate musical language to discuss a piece of music. Children can identify sounds in a piece of music. Children can explain how a piece of music makes them feel.
2	Rhythm and Tempo.	To understand and experiment with rhythm and tempo.	 Children can identify and recall a simple rhythm. Children can explain what tempo is, and how changing it can change the mood of a piece of music. Children can create their own simple rhythm using Busy Beats.
3	Melody and Pitch	To create a melodic phrase.	 Children can show an understanding of melody. Children can create a simple melodic pattern using 2Sequence and Busy Beats. Children can use a variety of notes, experimenting with pitch.
4	Creating Music	To compose a piece of electronic music.	 Children can explore and understand how music is created. Children can experiment with pitch, rhythm, and melody to create a piece of house music on Busy Beats.

English National Curriculum Objectives (Key Stage 2)

National Curriculum Objective	Strand	Units
Design, write and debug programs that accomplish specific goals, including controlling or simulating	Computer Science	4.1
physical systems; solve problems by decomposing them into smaller parts.		4.5
Use sequence, selection and repetition in programs; work with variables and various forms of input and	Computer Science	4.1
output.		4.5
Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in	Computer Science	4.1
algorithms and programs		4.5
Understand computer networks, including the Internet; how they can provide multiple services, such as the	Computer Science	4.2
World Wide Web; and the opportunities they offer for communication and collaboration.		4.7
		4.8
Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in	Information	4.7
evaluating digital content.	Technology	
Select, use and combine a variety of software (including internet services) on a range of digital devices to	Information	4.1
design and create a range of programs, systems and content that accomplish given goals, including	Technology	4.3
collecting, analysing, evaluating and presenting data and information.		4.4
		4.6
		4.9
Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify	Digital Literacy	4.2*
a range of ways to report concerns about content and contact.		

^{*}And discussed in other units



Welsh Digital Competence Framework

Strand	Element	Objective	Units Covered
		(Learners are able to):	
Citizenship Note: The Scheme of	Identity, image and reputation	Understand how to protect themselves from online identity theft.	4.2
Work contains a unit on Online Safety in each		Understand that information put online leaves a digital footprint or trail.	4.2
year group.		Identify risks and benefits of installing software.	4.2
Taken as a whole, these	Health and well-being	Identify the positive and negative influences of technology on health and the environment	4.2
units provide pupils with the		Explain the importance of balancing game and screen time with other parts of their lives.	4.2
citizenship knowledge.	Digital rights, licensing and	Understand that copying the work of others and presenting it as their own is called 'plagiarism.	4.2
	ownership	Recognise watermarks and copyright symbols	4.4
	Online	Identify actions to report and prevent cyberbullying.	4.2
	behaviour and cyberbullying	Identify appropriate behaviour when participating or contributing to collaborative online projects for learning.	Multiple Units Most children will demonstrate appropriate behaviours during collaborative and shared projects e.g. Use of 2Email, 2Blog and collaboration in 2Connect.
Interacting and collaborating	Communication	Exchange online communication with other learners in one or more languages, making use of a growing range of available features.	Through Blogging covered in several units. Email is specifically covered in unit 3.5. Most children will be comfortable with exchanging online communication with other



			learners using a range of Purple Mash tools
			such as 2Email, 2Blog, collaborative
			functionality e.g. 2Dos, 2Connect and
_			2Investigate.
	Collaboration	Manage an online file, adding and responding to comments.	All units by using Purple Mash 2Dos and
			commenting.
			In all areas of Purple Mash, work created,
			shared, edited and then submitted by children
			can be marked, rewarded and commented on
			by the teacher. Children then can respond to
			the teacher's comments. This encourages
			reflective discussion.
	Storing and	Understand that there are different types of storage, e.g.	4.2
	sharing	local, network, online, removable.	
		Manage files and folders locally or online.	All units
			Throughout Purple Mash children can create
			their own subfolders within their 'My Work'
			folder and move work from one folder to
			another. Children can save their work in a
			range of formats including- locally, on a
			network, online and on removable devices.
Producing	Planning,	Develop own success criteria to be used to plan a digital task.	All Units
	sourcing and		Throughout all the units, most children will be
	searching		able to develop their own success criteria
	-		from a given objective to plan and then
			implement a digital task
		Find relevant information using different keywords and	4.7
		search techniques.	
	sourcing and	Find relevant information using different keywords and	network, online and on removable dev All Units Throughout all the units, most childrenable to develop their own success crit from a given objective to plan and the implement a digital task



	Select an appropriate website from search results and begin to consider if the content is reliable.	4.2 4.7
Creating	Create and modify multimedia components using a range of software. Modify and present a range of text, image, sound, animation and video for selected purposes.	4.1 4.9 4.3 4.4 4.5 4.6 4.1 4.9 4.3
		4.4 4.5 4.6
Evaluating and improving	Give an opinion about their own and others' work and suggest improvements independently and collaboratively.	All units Most children will be able to provide opinions about their own and others' work and suggest improvements independently and collaboratively. They will be able to do this across a range of software and package features e.g. 2Calcualte (Spreadsheets), 2Code (Coding), 2Animate (Animation), 2Publish (Publishing), 2Logo (Logo) and 2Blog (Blogging).
	Give reasons for choices made.	All units Most children can use the range of software and package features to justify their reasons for the choices they make when evaluating and improving.



Data and	Problem	Demonstrate how part of a solution might need repetition.	4.1
Computational Thinking	solving and modelling	Represent a simple solution in a flowchart that contains a looping element.	4.1
	Data and information literacy	Begin to create data sets and extract information from them with tables, charts, spreadsheets and databases.	4.3



Northern Ireland Levels of Progression and Desirable Features

	Objective	Units Covered
Explore	Access, select, interpret and research information	4.2, 4.7
	from safe and reliable sources.	
	Investigate, make predictions and solve problems	4.1, 4.3, 4.4, 4.5, 4.6
	through interaction with digital tools.	
Express	Create, develop, present and publish ideas and	4.1, 4.2, 4.3, 4.4, 4.5, 4.6, 4.9
	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	All units
	of contemporary digital methods and tools,	
	exchanging, sharing, collaborating and developing	
	ideas digitally.	
Evaluate	Talk about, review and make improvements to	All units
	work, reflecting on the process and outcome, and	
	consider the sources and resources used, including	
	safety, reliability and acceptability.	
Exhibit	Manage and present their stored work and	All Units
	showcase their learning across the curriculum,	
	using ICT safely and responsibly.	

Desirable Features	Units Covered
Desktop Publishing	4.4
Film and Animation	4.6
Interactive Design	4.1, 4.5
Managing data	4.3
Music and Sound	4.9
Online Communication	Use of 2dos and blogging as part of lessons
Presenting	4.4, 4.6
Working with Images	4.6

Scottish Curriculum for Excellence (Second Level)

Technological developments in society	Units Covered
When exploring technologies in the world around me, I	4.4, 4.6, 4.9
can use what I learn to help to design or improve my	
ideas or products.	
I can investigate how an everyday product has changed	4.8 provides opportunities to explore
over time to gain an awareness of the link between	this area, 4.6
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	4.2
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.	4.1
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	
Through discovery and imagination, I can develop and	4.3 Modelling real-life situations
use problem-solving strategies to construct models.	technologically
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,	4.6 see also 2.6
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.	4.6, 4.4