Computing

Scheme of Work

Year 4 Overview

Contents

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 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 Create and Mange Users. Alternatively, please contact support at support@2simple.com 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.

Year 4 Whole Year Overview

Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
YEAR 4	**Unit 4.1 Coding** **Number of Weeks** – 6 **Main Programs** – 2Code						**Unit 4.2 Online Safety** **Weeks** – 4 **Programs** - 2Connect (Mind Map) 2Publish Plus Display boards				**Unit 4.3 Spreadsheets** **Weeks** – 5 **Programs** – 2Calculate					**Unit 4.4 Writing for Different Audiences** **Weeks** – 5 **Programs** – Writing Templates 2Simulate 2Connect (Mind Map) 2Publish Plus					**Unit 4.5 Logo** **Weeks** – 4 **Programs** – 2Logo				**Unit 4.6 Animation** **Weeks** – 3 **Programs** – 2Animate			**Unit 4.7 Effective Searching** **Weeks** – 3 **Programs** – Browser 2Quiz 2Connect (Mind Map)			**Unit 4.8 Hardware Investigators** **Weeks** – 2 **Programs** – 2Quiz 2Connect (Mind Map) Writing Templates	

Year 4 Unit Overview

Unit 4.1 – Coding

Lesson	Aims	Success Criteria
1	• To review coding vocabulary. • To use a sketch or storyboard to represent a program design and algorithm. • To use the design to create a program.	• Children can use sketching to design a program and reflect upon their design. • Children can create code that conforms to their design.
2	• To introduce the If/else statement and use it in a program. • To create a variable. • To explore a flowchart design for a program with an if/else statement • To create a program which responds to the If/else command, using the value of the variable.	• Children can create an 'If/else' statement. • Children understand what a variable is in programming. • Children can set/change the variable values appropriately. • Children can interpret a flowchart that depicts an if/else flowchart.
3	• To create a program with a character that repeats actions. • To use the Repeat Until command to make characters repeat actions. • To program a character to respond to user keyboard input.	• Children can show how a character repeats an action and explain how they caused it to do so. • Children can make a character respond to user keyboard input.
4	• To make timers and counting machines using variables to print a new number to the screen every second.	• Children can explain what a variable is when used in programming. • Children can create a timer that prints a new number to the screen every second. • Children can explain how they made their program change the number every second.
5	• To explore how 2Code can be used to investigate control by creating a simulation.	• Children can create an algorithm modelling the sequence of a simple event. • Children can manipulate graphics in the design view to achieve the desired look for the program. • Children can use an algorithm when making a simulation of an event on the computer.
6	• To know what decomposition and abstraction are in computer science. • To take a real-life situation, decompose it and think about the level of abstraction. • To design a decomposed feature of a real-life situation.	• Children can make good attempts to break down their aims for a coding 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.

Unit 4.2 – Online Safety

Lesson	Aims	Success Criteria
1	To understand how children can protect themselves from online identity theft. 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 wouldn't want to be in their digital footprint.
2	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	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 when participating or contributing to collaborative online projects for learning.	• Children are able to determine whether activities that they undertake online, infringe another's' copyright. They know the difference between researching and using information and copying it • Children know about citing sources that they have used.
4	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 are able to 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	Aims	Success Criteria
1	Using the formula wizard in the advanced mode to add formulae and explore formatting cells	• 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	Timer and spin button	• 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	• 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	• 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	○ 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	Aims	Success Criteria
1	To explore how font size and style can affect the impact of a text.	• Children have looked at and discussed a variety of written material where the font size and type are tailored to the purpose of the text. • Children have used text formatting to make a piece of writing fit for its audience and purpose.
2 & 3	To use a simulated scenario to produce a news report.	• Children have role-played the job of a journalist in a newsroom. • Children have interpreted a variety of incoming communications and used these to build up the details of a story. • Children have used the incoming information to write their own newspaper report.
4 & 5	To use a simulated scenario to write for a community campaign.	• Children have used 2Connect to mind-map ideas for a community campaign. • Children have used these ideas to write a persuasive letter or poster as part of the campaign. • Children have assessed their texts using criteria to judge their suitability for the intended audience.

Unit 4.5 – Logo

Lesson	Aims	Success Criteria
1	To learn the language of Logo. To input simple instructions on Logo.	• Children know what the different instructions are in Logo and how to type them. • Children can follow simple Logo instructions to create shapes on paper. • Children can follow simple instructions to create shapes in Logo.
2	For the children to use Logo to create letters.	• Children can create Logo instructions to draw letters of increasing complexity. • Children can write Logo instructions for a word of four letters.
3	To use the Repeat function in Logo to create shapes.	• Children can predict what shapes will be made from Logo instructions. • Children can create shapes using the Repeat function. • Children can find the most efficient way to draw shapes.
4	To use the Build feature in Logo.	• Children can use the Build feature. • Children can create 'flowers' using Logo.

Unit 4.6 – Animation

Lesson	Aims	Success Criteria
1	To discuss what makes a good animated film or cartoon and what their favourites are. To learn how animations are created by hand. To find out how 2Animate can be created in a similar way using the computer.	• Children have put together a simple animation using paper to create a flick book. • Children have an understanding of animation 'frames'. • Children have made a simple animation using 2Animate.
2	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	To be introduced to stop motion animation. To share animation on the class display board and by blogging.	• 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	Aims	Success Criteria
1	To locate information on the search results page.	• Children can structure search queries to locate specific information.
2	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	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	Aims	Success Criteria
1	To understand the different parts that make up a 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	To recall the different parts that make up a computer.	• Children have created a leaflet to show the function of computer parts.

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 physical systems; solve problems by decomposing them into smaller parts.	Computer Science	4.1 4.5
Use sequence, selection and repetition in programs; work with variables and various forms of input and output.	Computer Science	4.1 4.5
Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs	Computer Science	4.1 4.5
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	4.2 4.7 4.8
Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.	Information Technology	4.7
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	4.1 4.3 4.4 4.6
Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	Digital Literacy	4.2*

*And discussed in other units

Welsh Digital Competence Framework

Strand	Element	Objective (Learners are able to…):	Units Covered
Citizenship **Note**: The Scheme of Work contains a unit on Online Safety in each year group. Taken as a whole, these units provide pupils with the citizenship knowledge.	Identity, image and reputation	Understand how to protect themselves from online identity theft.	4.2
		Understand that information put online leaves a digital footprint or trail.	4.2
		Identify risks and benefits of installing software.	4.2
	Health and well-being	Identify the positive and negative influences of technology on health and the environment	4.2
		Explain the importance of balancing game and screen time with other parts of their lives.	4.2
	Digital rights, licensing and ownership	Understand that copying the work of others and presenting it as their own is called 'plagiarism.	4.2
		Recognise watermarks and copyright symbols	4.4
	Online behaviour and cyberbullying	Identify actions to report and prevent cyberbullying.	4.2
		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 sharing	Understand that there are different types of storage, e.g. local, network, online, removable.	4.2
		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, sourcing and searching	Develop own success criteria to be used to plan a digital task.	All Units Throughout all the units, most children will be 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 search techniques.	4.7
		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.	4.1 4.3 4.4 4.5 4.6
		Modify and present a range of text, image, sound, animation and video for selected purposes.	4.1 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 Computational Thinking	Problem solving and modelling	Demonstrate how part of a solution might need repetition.	4.1
		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 from safe and reliable sources.	4.2, 4.7
	Investigate, make predictions and solve problems through interaction with digital tools.	4.1, 4.3, 4.4, 4.5, 4.6
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.	4.1, 4.2, 4.3, 4.4, 4.5, 4.6
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	4.4
Film and Animation	4.6
Interactive Design	4.1, 4.5
Managing data	4.3
Music and Sound	See unit 2.7
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 can use what I learn to help to design or improve my ideas or products.	4.4, 4.6
I can investigate how an everyday product has changed over time to gain an awareness of the link between scientific and technological developments	4.8 provides opportunities to explore this area, 4.6
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 various types of software, including those which help find, organise, manage and access information, I can apply what I learn in different situations.	By covering a variety of units.
I can access, retrieve and use information from electronic sources to support, enrich or extend learning in different contexts.	By covering a variety of units.
Throughout all my learning, I can use search facilities of electronic sources to access and retrieve information, recognising the importance this has in my place of learning, at home and in the workplace.	By covering a variety of units.
I explore and experiment with the features and functions of computer technology and I can use what I learn to support and enhance my learning in different contexts.	By covering a variety of units.
I can create, capture and manipulate sounds, text and images to communicate experiences, ideas and information in creative and engaging ways.	By covering a variety of units.
Computing science contexts for developing technological skills and knowledge	**Units Covered**
I am developing my knowledge and use of safe and acceptable conduct as I use different technologies to interact and share experiences, ideas and information with others	4.2

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 developing technological skills and knowledge	**Units Covered**
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 use problem-solving strategies to construct models.	4.3 Modelling real-life situations 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, to represent objects or ideas, enhancing them using effects such as light, shadow and textures.	4.6 see also 2.6
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