Computing Scheme of Work Overview Year 2

Contents

Introduction

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 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.

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 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:

- 2.4 Questioning
- 2.3 Spreadsheet units

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.

- 2.6 Creating Pictures
- 2.8 Presenting Ideas

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:

- 2.7 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 is a crash course unit for Coding using 2Code. Use this units instead of the standard Coding unit if the children have not completed the prior year's coding unit. The crash course `is 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 then children will be ready for the standard units for coding and 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 2 Whole Year Overview

Unit Number	Title	Number of lessons	Tools
2.1	Coding	6	2Code
2.2	Online Safety	2	Various
2.3	Spreadsheets	6	2Calculate
2.4	Questioning	5	2Question, 2Investigate
2.5	Effective Searching	3	Internet Browser
2.6	Creating Pictures	5	2PaintAPicture
2.7	Making Music	3	2Sequence
2.8	Presenting Ideas	4	Various

Predominant Computing strand*

	Computer Science
	Information Technology
	Digital 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.

Year 2 Unit Overview

Unit 2.1 – Coding

Lesson	Title	Aims (Objectives)	Success Criteria
1	Algorithms	• To understand what an algorithm is. • To create a computer program using an algorithm.	• Children can explain that an algorithm is a set of instructions. • Children can describe the algorithms they created. • Children can explain that for the computer to make something happen, it needs to follow clear instructions.
2	Collision Detection	• To create a program using a given design. • To understand the collision detection event.	• Children can plan an algorithm that includes collision detection. • Children can create a program using collision detection. • Children read blocks of code and predict what will happen when it is run.
3	Using a Timer	• To understand that algorithms follow a sequence. • To design an algorithm that follows a timed sequence.	• Children can create a program that uses a timer-after command. • Children can explain what the timer-after command does in their program. • Children can predict what will happen in a program that includes a timer-after command.
4	Different Object Types	• To understand that different objects have different properties. • To understand what different events do in code.	• Children can create a computer program that includes different object types. • Children can modify the properties of an object. • Children can use different events in their program to make objects move.
5	Buttons	• To create a program using a given design. • To understand the function of buttons in a program.	• Children can create a computer program that includes a button object. • Children can explain what a button does in their program. • Children can modify the properties of a button to fit their program design.
6	'Smelly Code' Debugging	• To know what debugging means. • To understand the need to test and debug a program repeatedly. • To debug simple programs.	• Children can explain what debug (debugging) means. • Children can use a design document to start debugging a program. • Children can debug simple programs.

Unit 2.2 – Online Safety

Lesson	Title	Aims (Objectives)	Success Criteria
1	Searching and Sharing	• To know how to refine searches using the Search tool. • To know how to share work electronically using the display boards. • To use digital technology to share work on Purple Mash to communicate and connect with others locally. • To have some knowledge and understanding about sharing more globally on the Internet.	• Children can use the search facility to refine searches on Purple Mash by year group and subject. • Children can share the work they have created to a display board. • Children understand that the teacher approves work before it is displayed. • Children are beginning to understand how things can be shared electronically for others to see both on Purple Mash and the Internet.
2	Email Using 2Respond	• To introduce Email as a communication tool using 2Respond simulations. • To understand how we talk to others when they are not there in front of us. • To open and send simple online communications in the form of email.	• Children know that Email is a form of digital communication. • Children understand how 2Repond can teach them how to use email. • Children can open and send an email to a 2Respond character. • Children have discussed their own experiences and understanding of what email is used for. • Children have discussed what makes us feel happy and what makes us feel sad.
3	Digital Footprint	• To understand that information put online leaves a digital footprint or trail. • To begin to think critically about the information they leave online. • To identify the steps that can be taken to keep personal data and hardware secure	• Children can explain what a digital footprint is. • Children can give examples of things that they would not want to be in their digital footprint.

Unit 2.3 – Spreadsheets

Lesson	Title	Aims (Objectives)	Success Criteria
1	Introduction to Spreadsheets	• To understand what a spreadsheet is used for. • To understand what a spreadsheet looks like. • To be able to navigate around a spreadsheet and enter data. • To learn new vocabulary related to spreadsheets.	• Children can navigate around a spreadsheet. • Children can enter data into cells. • Children can explain what rows and columns are.
2	Adding Images to a Spreadsheet	• To add different types of images to a spreadsheet. • To use image as calculation aids. • To use the 'move cell' tool to make images draggable.	• Children can use the menu buttons to add different types of images. • Children can use the apparatus images to solve maths questions. • Children can use the 'move cell' tool so that images can be dragged around the spreadsheet.
3	Exploring images and values	• To use clipart images in a spreadsheet. • To assign values to images. • To use assigned values in calculations.	• Children can use the clipart gallery to add images to a spreadsheet. • Children can give images a value. • Children can make use of the assigned values in calculations.
4	Totalling tools	• To use 2Calculate totalling tools. • To use 2Calculate to solve a simple puzzle.	• Children can use tools in a spreadsheet to automatically total rows and columns. • Children can use a spreadsheet to solve a mathematical puzzle.
	Using a Spreadsheet to add amounts	• To explore the capabilities of a spreadsheet in adding up coins to match the prices of objects	• Children can use images in a spreadsheet. • Children can work out how much they need to pay using coins by using a spreadsheet to help calculate.
	Creating a table and block graph	• To add and edit data in a table layout. • To find out how spreadsheet programs can automatically create graphs from data.	• Children can create a table of data on a spreadsheet. • Children can use a spreadsheet program to automatically create charts and graphs from data.

Unit 2.4 – Questioning

Lesson	Title	Aims (Objectives)	Success Criteria
1	Using and Creating Pictograms	• To show that the information provided on pictograms is of limited use beyond answering simple questions	• Children understand that the information on pictograms cannot be used to answer more complicated questions.
2	Asking Yes / No Questions	• To use yes/no questions to separate information	• Children have used a range of yes/no questions to separate different items.
3	Binary Trees	• To construct a binary tree to separate different items.	• Children understand what is meant by a binary tree. • Children have designed a binary tree to sort pictures of children.
4	Using 2Question - a Computer-Based Binary Tree Program	• Use 2Question (a binary tree) to answer questions	• Children understand that questions are limited to 'yes' and 'no' in a binary tree. • Children understand that the user cannot use 2Question to find out answers to more complicated questions. • Children have matched 2Simple item pictures to names using a binary tree.
5	Using 2Investigate: a Non-Binary Database.	• To use a database to answer more complex search questions. • To use the Search tool to find information.	• Children understand what is meant by a database. • Children have used a database to answer simple and more complex search questions.

Unit 2.5 – Effective Searching

Lesson	Title	Aims (Objectives)	Success Criteria
1	Understanding the Internet and Searching	• To understand the terminology associated with the Internet and searching.	• Children can recall the meaning of key Internet and searching terms. • Children have completed a quiz about the Internet.
2	Searching the Internet	• To gain a better understanding of searching the Internet.	• Children can identify the basic parts of a web search engine search page. • Children have learnt to read a web search results page. • Children can search the Internet for answers to a quiz.

3	Sharing Knowledge of the Internet and Effective Searching	• To create a leaflet to help someone search for information on the Internet.	• Children have created a leaflet to consolidate knowledge of effective Internet searching.

Unit 2.6 – Creating Pictures

Lesson	Title	Aims (Objectives)	Success Criteria
1	Introduction and Impressionism	• To explore 2Paint A Picture. • To look at the work of Impressionist artists and recreate them using the Impressionism template.	• Children can describe the main features of impressionist art. • Children can use 2Paint a Picture to create art based upon this style.
2	Pointillist Art	• To look at the work of pointillist artists such as Seurat. • To recreate pointillist art using the Pointillism template.	• Children can explain what pointillism is. • Children can use 2Paint a Picture to create art based upon this style.
3	Piet Mondrian	• To look at the work of Piet Mondrian and recreate it using the Lines template.	• Children can describe the main features of Piet Mondrian's work. • Children can use 2Paint a Picture to art based upon his style.
4	William Morris and Pattern	• To look at the work of William Morris and recreate it using the Patterns template.	• Children can describe the main features of art that uses repeating patterns. • Children can use 2Paint a Picture to create art by repeating patterns in a variety of ways. • Children can combine more than one effect in 2Paint a Picture to enhance patterns.
5	Surrealism and eCollage	• To look at some surrealist art and create your own using the eCollage function in 2Paint A Picture.	• Children can describe surrealist art. • Children can use the eCollage function in 2Paint a Picture to create surrealist art using drawing and clipart.

Unit 2.7 – Making Music

Lesson	Title	Aims (Objectives)	Success Criteria
1	Introducing 2Sequence	• To be introduced to making music digitally using 2Sequence. • To explore, edit and combine sounds using 2Sequence.	• Children understand what 2Sequence is and how it works. • Children have used the different sounds within 2Sequence to create a tune. • Children have explored how to speed up and slow down tunes. • Children understand what happens to the tune when sounds are moved.
2	Making Music	• To add sounds to a tune to improve it. • To think about how music can be used to express feelings and create tunes which depict feelings.	• Children have added sounds to a tune they have already created to change it. • Children have considered how music can be used to express feelings. • Children can change the volume of the background sounds. • Children have created two tunes which depict two feelings.
3	Soundtracks	• To upload a sound from a bank of sounds into the Sounds section. • To record their own sound and upload it into the Sounds section. • To create their own tune using the sounds which they have added to the Sounds section.	• Children have uploaded and used their own sound chosen from a bank of sounds. • Children have created, uploaded and used their own recorded sound. • Children have created their own tune using some of the chosen sounds.

Unit 2.8 – Presenting Ideas

Lesson	Title	Aims (Objectives)	Success Criteria
1	Presenting a Story Three Ways	• To explore how a story can be presented in different ways.	• Children have examined a traditional tale presented as a mind map, as a quiz, as an e-book and as a fact file. • Children know that digital content can be represented in many forms.
2	Presenting Ideas as a Quiz	• To make a quiz about a story or class topic.	• Children have made a quiz about a story using 2Quiz. • Children can talk about their work and make improvements to solutions based on feedback received.
3	Making a Non-Fiction Fact File	• To make a fact file on a non-fiction topic.	• Children have extracted information from a 2Connect file to make a publisher fact file on a non-fiction topic. • Children have added appropriate clipart. • Children have added an appropriate photo. • Children know that data can be structured in tables to make it useful.
4	Making a Presentation	• To make a presentation to the class.	• Children can use a variety of software to manipulate and present digital content and information. • Children can collect, organise and present data and information in digital content. • Children can create digital content to achieve a given goal by combining software packages.

English National Curriculum Objectives (Key Stage 1)

National Curriculum Objective	Strand	Units
Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions.	Computer Science	2.1
Create and debug simple programs	Computer Science	2.1
Use logical reasoning to predict the behaviour of simple programs.	Computer Science	2.1
Use technology purposefully to create, organise, store, manipulate and retrieve digital content	Information Technology	2.3 2.4 2.5 2.6 2.7 2.8
Recognise common uses of information technology beyond school	Digital Literacy	2.5*
Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies.	Digital Literacy	2.2*

*And in other units when appropriate.

Welsh Digital Competence Framework

Strand	Element	Objective (Learners are able to...):	Units Covered
Citizenship	Identity, image and reputation	Understand that information put online leaves a digital footprint or trail	2.2 2.5
		Identify the steps that can be taken to keep personal data and hardware secure.	2.2
	Health and well-being	Begin to identify the advantages and disadvantages of digital media and devices on their lives.	2.2
	Digital rights, licensing and ownership	Add their name and the date to work they have created and give reasons why this is important. type their first name and surname, add a date to pieces of work and orally provide reasons for doing so	2.2 (and others where relevant)
	Online behaviour and cyberbullying	Use digital technology to communicate and connect with others locally and globally, e.g. text, image, photographs, video, newsletters, e-mail, web services.	2.2 (and others where relevant)
		Interact appropriately with others, e.g. follow the same rules when communicating face-to-face and online.	2.8
Interacting and collaborating	Communication	Send simple online communication in one or more languages from a single user account, e.g. e-mail (ensuring address is typed accurately) or video call.	2.2
	Collaboration	Use an online collaborative platform to create or edit a file, e.g. word processing, presenting tools, spreadsheets.	Unit- 2.8 and many Purple Mash activities.
	Storing and sharing	Save work using an appropriate file name, e.g. child's name and simple title	Most Units (2.1 Specifically)

		Use an icon to open a saved file.	Unit- All units Most children will be able to identify a file icon to open within the 'my work' area of Purple Mash. Specifically, they will retrieve and open files in these lessons- Unit 2.6 Lesson 1 Point 9, Unit 2.4 Lesson 4 Point 2.
Producing	Planning, sourcing and searching	Plan how to complete a task in relation to identified success criteria	2.1, 2.3 2.4, 2.5 2.6, 2.7 2.8
		Use keywords to search for specific information to solve a problem, e.g. Type keywords into a search engine and explain how their choice of website helps to solve the problem.	2.5
	Creating	Create and edit multimedia components in order to develop text, image, sound, animation and video for a range of tasks.	2.6 2.7 2.8
	Evaluating and improving	Identify what worked and what didn't, giving some of the reasons for their thoughts.	Most units Most children will be able to evaluate their own and others' digital work. They will be able to identify some areas of strength and improvement, giving reasons for some of their thoughts. Their evaluations will focus on suitability of digital content for intended purpose, functionality and their choice of software tool to achieve a given goal.
Data and Computational Thinking	Problem solving and modelling	Explain to others how a designed solution works, e.g. explain a design for a simple playground game and test, correcting any issues that arise.	2.1

		Predict the outcome of simple sequences of instructions, e.g. predict what will happen if instructions are followed accurately	2.1
		Create a simple solution that tests an idea, e.g. predict what would happen if it went wrong such as the sequence of waking up to go to school.	2.1 2.3
	Data and information literacy	Collect and organise data into groups, e.g. gather data by voting or sorting and represent in pictures, objects or drawings.	2.4
		Extract information from simple tables and graphs, e.g. answer questions on table graph	2.3 2.4
		Record data collected in a variety of suitable formats, e.g. lists, tables, block graphs and pictograms.	2.3 2.4

Northern Ireland Levels of Progression and Desirable Features

	Objective	Units Covered
Explore	Access, select, interpret and research information from safe and reliable sources.	2.2, 2.5, 2.8
	Investigate, make predictions and solve problems through interaction with digital tools.	2.1, 2.3, 2.4
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.	Variety of units using different tools
Exchange	Communicate safely and responsibly using a range of contemporary digital methods and tools, exchanging, sharing, collaborating and developing ideas digitally.	2.3, 2.4, 2.6, 2.7, 2.8 Use of 2Blog and Display boards to share work
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	2.8
Film and Animation	2.6, 2.7
Interactive Design	2.1
Managing data	2.3, 2.4
Music and Sound	2.7, 2.6
Online Communication	2.2
Presenting	2.8
Working with Images	2.6

Scottish Curriculum for Excellence (First Level)

Technological developments in society	Units Covered
By exploring and using technologies in the wider world, I can consider the ways in which they help.	Discussed throughout units where relevant.
I can work with others to generate, discuss and develop imaginative ideas to create a product of the future.	Many units use these skills.
By exploring current news items of technological interest, I have raised questions on the issues and can share my thoughts.	2.2, 2.5, 2.8
Throughout all my learning, I take appropriate action to ensure conservation of materials and resources, considering the impact of my actions on the environment.	Can be emphasised through all units.
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.

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.	2.2
I am developing problem-solving strategies, navigation and co-ordination skills, as I play and learn with electronic games, remote control or programmable toy.	2.1
Craft, design, engineering and graphics contexts for developing technological skills and knowledge	**Units Covered**
Having evaluated my work, I can adapt and improve, where appropriate, through trial and error or by using feedback.	2.1, 2.8
I am developing an interest, confidence and enjoyment in using drawing and colour techniques, manually or electronically, to represent ideas in different learning situations	2.6

I explore materials, tools and software to discover what they can do and how I can use them to help solve problems and construct 3D objects which may have moving parts.	2.1, 2.3