



Declarative and Procedural Knowledge

Year 2

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Introduction

The Declarative and Procedural Knowledge documents are designed to support teachers in understanding the intended learning outcomes of each unit. They outline the specific knowledge and skills that children should acquire and demonstrate by the end of their learning.

- Declarative Knowledge sets out what children will **know**. This includes facts, concepts, definitions, and key ideas that form the foundation of the unit.
- Procedural Knowledge sets out what children will **be able to do**. This focuses on the skills and processes children should develop and apply when using technology.

These documents are used to:

- Provide teachers with a clear overview of learning expectations for each unit.
- Ensure consistency of teaching and progression of knowledge and skills across year groups.
- Support planning, teaching, and assessment by highlighting the essential outcomes to focus on.
- Reinforce the balance between understanding (knowing) and application (doing) in computing.

This document aims to help teachers see the bigger picture of what children will learn, how they will apply it, and how these elements connect across the computing curriculum.

Introduction to Purple Mash

National Curriculum Links	Dominant objectives for this unit: • Use technology purposefully to create, organise, store, manipulate and retrieve digital content. • Use technology safely and respectfully, keeping personal information private.
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Declarative - By the end of the unit the children will know that:	Procedural – By the end of the unit the children will know how to:
• It is important to log in to a site, the importance of keeping passwords safe and the need to log out at the end of a session.	• Access Purple Mash from home and school. • Log out of Purple Mash. • Give reasons why it is important to keep a password safe and not share it with other people.
• An avatar is a virtual representation of a person suitable for use online.	• Make and edit their own avatar.
• The 2Do system is used to set work for children within Purple Mash.	• Open 2Dos. • Save 2Dos. • Hand in 2Dos and communicate with their teacher via the 2Do.
• Online sites have a main page called the homepage.	• Access the Purple Mash homepage when on the site.
• Online sites often use an alert system to communicate with the user.	• Access alerts within Purple Mash.
• To move to a different activity in Purple Mash, you must first close the current one.	• Close activities in Purple Mash.
• Many online sites, including Purple Mash, have an area for an individual's work that is accessible only to the individual (and in Purple Mash to their teacher as well).	• Access their work area. • Save work in their work area. • Locate and open work they have done previously in their work folder.
• To access Purple Mash programs, you use the Tools area.	• Open a specified tool.
• You can access non-visible parts of a screen using scrolling.	• Scroll up and down and from side to side where applicable.
• You can use a physical or on-screen keyboard to type upper and lower-case letters and spaces.	• Type upper and lower-case letters and spaces using the device provided.

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Route Explorers

National Curriculum Links	Dominant objectives for this unit: • Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions. • Create and debug simple programs. • Use logical reasoning to predict the behaviour of simple programs.
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Declarative - By the end of the unit the children will know that:	Procedural – By the end of the unit the children will know how to:
• The combination of a direction and a distance is known as a command in 2Go.	• Input commands in 2Go.
• Commands can be input into 2Go to control the movement of a screen turtle in four directions.	• Input purposeful commands in 2Go to move the turtle in a specific direction towards a goal.
• Planning a route is important in order to input the correct commands.	• Use techniques such as finger movements to plan a route.
• Routes can be programmed to perform more than one command in a sequence.	• Input several commands into a sequential algorithm layout and run this code to move the turtle along a programmed route. • Reset the turtle to the starting position to re-run the code.
• A list of instructions for a route is the algorithm.	• Plan the route by writing the algorithm first and then inputting the commands.
• Errors (bugs) occur because commands may have been input incorrectly. • Fixing the errors is called debugging.	• Make logical attempts to debug code for routes. • Reset, debug and re-run the code to test routes.

The Internet

National Curriculum Links	Dominant objectives for this unit: • Use technology purposefully to create, organise, store, manipulate and retrieve digital content. • Recognise common uses of information technology beyond school.
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Declarative - By the end of the unit the children will know that:	Procedural – By the end of the unit the children will know how to:
• The Internet is a global network of connected computers around the world.	• Explain the difference between the Internet and the World Wide Web, recognising that they describe different things.
• An internet connection allows people to communicate with others over the internet and that this is commonly known as being online. • An internet connection can be made using wires or wirelessly.	• Explain that Wi-Fi describes a wireless internet connection.
• A browser is used to access websites and webpages of the World Wide Web.	• Recognise a web browser.
• The World Wide Web refers to the documents and pages someone sees when using a browser.	• Find information on a school's website by viewing different webpages.
• Smart devices are those that can connect to the internet to do more than a basic function.	• Decide whether a device is a smart device. • Give examples of smart devices.
• The 'front page' of a website is known as the home page.	• Navigate to the Purple Mash homepage and to a school's website homepage.
• Webpages have links that, when clicked, display other webpages.	• Use a link on a webpage of a school's website.
• Websites can be found using a browser that contains a search engine.	• Use keywords to search for information using a search engine.

Creating Pictures

National Curriculum Links	Dominant objectives for this unit: Use technology purposefully to create, organise, store, manipulate and retrieve digital content.
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Declarative - By the end of the unit, the children will know that:	Procedural – By the end of the unit, the children will know how to:
- Digital art tools usually have a choice of painting effects. - Painting effects can be combined to help a user make pictures of varying styles.	- Explore the range of painting effects in 2Paint. - Observe how the painting effects give different results. - Produce digital images in traditional art styles using digital painting effects.
The size of an onscreen painting tool brush stroke can be manipulated.	Use the brush tool slider to change the size of brush strokes to achieve the desired effects.
Intensity of colours can be manipulated digitally.	Use the dilute tool to manipulate the intensity of any selected colour.
Outline features in a digital art program can help a user compose an image.	Make use of outline features, such as selecting, resizing, and editing outlines, to enhance their digital art.

Spreadsheets

National Curriculum Links	Dominant objectives for this unit: • Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions. • Create and debug simple programs. • Use logical reasoning to predict the behaviour of simple programs.
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Declarative - By the end of the unit, the children will know that:	Procedural – By the end of the unit, the children will know how to:
• A spreadsheet is a program that organises data in rows and columns. • 2Calculate is a type of spreadsheet program. • Each box in a spreadsheet is called a cell, and every cell has a unique name. • Rows run horizontally, and columns run vertically.	• Identify a cell by its name. • Enter data into a cell and move between cells with ease. • Explain the difference between a row and column.
• Formatting tools can be used to change the way data looks (e.g. size, colour, wrap text). • It is important to consider the clarity of a spreadsheet and what can be done to improve this.	• Resize rows and columns to make data clearer. • Use formatting tools such as colour, wrap text, and alignment to improve clarity and organisation of data. • Check and improve their spreadsheet to ensure it is neat, accurate, and easy to understand.
• Images and numbers can be used in spreadsheets, and values can be assigned to images.	• Insert images and assign them numerical values.
• Spreadsheets can use a range of mathematical operations to carry out calculations automatically.	• Apply calculation tools (add, subtract, multiply, divide) to carry out operations in a spreadsheet.
• 2Calculate contains various tools that can be used for different reasons. • The 'Is Equals' tool can check if a calculation is correct. • The 'Quiz' tool can be used to make interactive questions inside a spreadsheet. • The 'Count' tool can show how many of something there are in a spreadsheet.	• Use the 'Is Equals' tool to check whether a calculation is correct. • Use the 'Quiz' tool to create an interactive calculation. • Use the 'Count' tool to total how many of an item appear in the spreadsheet.

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• Block diagrams are a way of presenting data to make it easier to understand. • Two sets of data are needed to create a block diagram (one for the category, one for the amount).	• Create block diagrams in 2Calculate to present data visually.
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Questioning

National Curriculum Links	Dominant objectives for this unit: Use technology purposefully to create, organise, store, manipulate and retrieve digital content.
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Declarative - By the end of the unit, the children will know that:	Procedural – By the end of the unit the children will know how to:
Data is information that can be collected, recorded, and presented in different ways.	Collect simple data by asking questions and recording answers.
- A tally chart is a method of counting and recording data. - Pictograms and bar charts are ways of presenting data visually.	Use tally charts to organise collected data.
Closed questions can limit responses, while open questions allow more detailed answers.	Create pictograms and bar charts using 2Count to represent information.
Yes/No questions can be used to help sort and classify information.	Form clear Yes/No questions to help identify or sort objects.
A branching database uses Yes/No questions to organise and identify information.	- Follow a branching database to find an answer. - Use 2Question to navigate and explore branching databases.

Coding

National Curriculum Links	Dominant objectives for this unit: • Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions. • Create and debug simple programs. • Use logical reasoning to predict the behaviour of simple programs.
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Declarative - By the end of the unit, the children will know that:	Procedural – By the end of the unit, the children will know how to:
• In computing, a set of instructions is known as an algorithm. Steps in an algorithm must be followed to achieve the intended outcome.	• Follow a written algorithm. • Identify required events, objects and actions from a program algorithm.
• The collision detection event is a way to cause an action when two objects collide with each other.	• Identify the collision detection block within the event category blocks. • Use a collision detection block in a program. • Assign two objects within the collision detection command. • Assign an event for when the two objects collide.
• Programs follow a sequence of instructions (commands) in order.	• Run code and see the sequential effect that occurs.
• Timer commands can be used to make parts of the program run after a set time.	• Identify the timer command within the control category blocks. • Use the time after command and set a specified number of seconds. • Nest actions within the timer command to delay their running.
• Different object types in 2Code have different attributes that can be changed.	• Use a variety of object types. • Identify attributes which appear under some objects and not in others e.g. a turtle type and a character type. • Alter attributes of an object, such as the image and scale within Design View.
• Event commands in 2Code are used to create blocks of code that are run when an	• Recognise the event command blocks – When Key Event, When Swiped Event,

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event happens. There are different event command blocks in 2Code.	When Clicked Event and Collision Detection. • Use a variety of event blocks in different circumstances. • Use specific event commands for specific objects, such as a click event for a button object.
• Debugging is the process of testing that a program works as intended, looking for any bugs and fixing the problems when found.	• Use logical reasoning to identify the source of bugs and attempt to fix them. • Test and debug code in a systematic way.

Coding Crash Course

National Curriculum Links	Dominant objectives for this unit: • Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions. • Create and debug simple programs. • Use logical reasoning to predict the behaviour of simple programs.
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Declarative - By the end of the unit, the children will know that:	Procedural – By the end of the unit, the children will know how to:
• In computing, a set of instructions is known as an algorithm. Steps in an algorithm must be followed to achieve the intended outcome.	• Interpret what a piece of code means. • Follow a written algorithm. • Identify required events, objects and actions from a program algorithm. • Create instructions in the form of simple algorithms with attention to the order and the level of detail.
• Programs follow a sequence of instructions (commands) in order.	• Run code and see the sequential effect that occurs.
• In 2Code, code is created using coloured code blocks that can connect to form commands.	• Make commands using the code blocks. • Run these commands.
• Commands consist of a combination of different block types; these are actions, events, objects and outputs	• Decide which type of block is needed and which combinations of block types will be needed to complete a command.
• An object is an item in a program that can be given instructions to change in some way by adding an action block.	• Use objects within commands when coding.
• An action is the way that an object changes when programmed to do so. For example, move.	• Connect object and action blocks to form commands.
• An event is something that makes a block of code run in response to an action such as a user pressing a key or clicking a screen.	• Use the 'When Clicked' and 'Collision Detection' event code blocks. • Position a command inside an event.
• The way that code blocks are positioned within each other determines the order in which the code runs.	• Create code that is nested for example putting an object and action command within an event command.

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The look of a program in 2Code is created in the Design View using backgrounds and objects.	- Switch to design view. - Choose background images. - Add objects and modify some attributes such as scale.
Timer commands can be used to make parts of the program run after a set time.	- Identify the timer command within the control category blocks. - Use the time after command and set a specified number of seconds. - Nest actions within the timer command to delay their running.
Debugging is the process of testing that a program works as intended, looking for any bugs and fixing the problems when found.	- Use logical reasoning to identify the source of bugs and attempt to fix them. - Test and debug code in a systematic way.

Presenting Ideas

National Curriculum Links	Dominant objectives for this unit: Use technology purposefully to create, organise, store, manipulate and retrieve digital content.
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Declarative - By the end of the unit, the children will know that:	Procedural – By the end of the unit, the children will know how to:
A presentation is a way to share ideas, information, or stories with others.	Use a concept map they have created to share their ideas with others.
A concept map helps organise ideas before presenting them to others.	Organise their ideas clearly on a concept map in 2Connect.
A concept map is made of different nodes. These are boxes or bubbles that contain one main idea.	Place nodes in a logical position and type in a main idea in each one.
A concept map usually starts with a main node in the centre which shows the title. Other ideas are added as nodes around it, connected to the main idea.	- Place a node in the centre of their concept map and write a title. - Add nodes around the title to extend their ideas on the topic.
Ideas should be grouped logically so they are easy to follow. Colour on the nodes can be used to show which ideas are grouped.	- Group ideas together on their concept map. - Change the colour of a node. - Ensure that nodes that are part of the same idea are all the same colour or shades of the same colour.
Connecting lines (or arrows) link nodes together to show how ideas are related.	- Draw connecting lines to link nodes that are connected in terms of ideas. - Ensure that all nodes are connected to another.
Concept maps help you plan the order of your presentation.	Use a concept map to plan a logical order for a presentation.

Making Music

National Curriculum Links	Dominant objectives for this unit: Use technology purposefully to create, organise, store, manipulate and retrieve digital content.
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Declarative - By the end of the unit, the children will know that:	Procedural – By the end of the unit, the children will know how to:
Live, instrumental music is created by real instruments and digital music is created by using a computer.	- Identify if sounds are made by real instruments or made by a computer. - Identify the sound of different instruments, whether live or digitally made.
Music can be made digitally using programs like 2Sequence.	- Open 2Sequence. - Listen to a premade composition by pressing the play button. - Observe what happens on the screen when composition is playing including the placement of sounds.
Sounds can be incorporated into music programs to make a tune.	- Explore the sounds and instruments category. - Drag sounds into the playable area. - Play and experiment with the organisation of sounds on each track.
Notes that are the same colour on 2Sequence represent the same note tone.	- Compare the sounds of different notes. - Recognise that some notes sound the same. - Recognise that some notes sound better together than others.
The speed of a digital musical, known as tempo, can be altered by changing the BPM (beats per minute).	- Locate the beats per minute slider. - Experiment with changing the slider's position. - Listen in play mode to how changing the position of the slider affects a composition.
The volume of instruments/sounds on a track can be changed when using music programs.	- Locate the different rows of music. - Locate the volume sliders at the end of each row of music (tracks). - Adjust the volume on individual rows of music (tracks). - Play the music and test the effect of altering the volume of individual tracks.

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• Looping a track means that it continues to play on repeat.	• Experiment with the looping feature. • Identify how this affects a tune. • Manipulate a piece of music so that it sounds correct when looping and doesn't have a noticeable jump when it restarts each repeat.
• Music programs let users incorporate their own sounds into a composition.	• Locate the My Sounds section. • Click on the record icon. • Use the record button to incorporate own sound from a microphone. • Test the recording back by pressing play. • Click done when happy with recording.