Declarative and Procedural Knowledge

Year 3

Contents

Introduction

It is important to note that for simplicity and to demonstrate strand coverage, units have been put into their 'best fit' strand as per the Scheme of Work Overview document.

Key Stage 1

- In many units, children will be furthering online understanding and concepts of technology (DL) through making digital content (IT and CS)

Key Stage 2

- Children will be understanding of the capabilities of the World Wide web (CS) while searching online (IT).
- They will be developing their understanding of appropriate behaviour online (DL) skills while learning about searching the Internet (IT).

Both Key Stages • At all times children will be learning about using technology safely and respectfully (DL).

- In most units for all strands, children will be developing their general information technology skills (IT).
- This overlap, repetition and reinforcement helps to give children a deeper understanding of the knowledge and skills across all strands and of their integrated nature in the real-world.

*For more detailed information to assess pupils, see the assessment statements at the end of each unit and repeated in the Assessment document for each year group.

Unit 3.1 – Coding

NATIONAL CURRICULUM LINKS	**Dominant strand for this unit: Computer Science** • Use technology purposefully to create, organise, store, manipulate and retrieve digital content. • Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts. • Use sequence, selection and repetition in programs; work with variables and various forms of input and output. • Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs. **There will be elements from the other two strands due to the nature of the computing curriculum.**

Declarative - By the end of the unit the students **will know that**:	**Procedural** – By the end of the unit the students **will know how to**:
• Flowcharts are a type of diagram that use specifically shaped labelled boxes and arrows to represent an algorithm as a diagram.	• Identify the point the flowchart starts. • Identify any points on it that represent an input or output. • Identify any delays such as a timer. • Identify any processes. • Follow the flow of the chart and interpret what it is representing. • Create a representation of the flowchart by using 2Code.

• Timers are used in coding to help control when a block of commands are run. Timer commands can be run after a timed delay or at regular intervals. In 2Code there are two timer options, **timer every** or **timer after**. These can be altered by changing the number of seconds/quarter seconds.	• • Review use of **timer after** command from previous year. Insert a **timer after** command in code view and specify number of seconds. • Insert code within the timer that will action after specified seconds. • Nest a second timer within a **timer after** command knowing that the second (nested timer) will run only after the first timer has finished. • Begin to distinguish the difference between **timer every** command from the **timer after** command. • Use a **timer every** command to make an event happen such as a ticking sound for a clock every second.
• **Repeat** is a control block and blocks of commands can be set to repeat a specified number of times using the **repeat** control block.	• Understand that the repeat command is useful for avoiding lots of unnecessary coding repetition such as when a screen turtle is used to draw a square. • Identify the **repeat** command as part of the control blocks group. • Insert a **repeat** command into the coding area and set it a specified number of times to repeat. • Add a block of commands to a **repeat** command. • Execute the code and check that it has operated as intended.

• Testing, debugging and fixing are an important part of the process of making computer programs. Understanding what nesting is and the effect it has on a program can help when trying to debug a program.	• • Recognise examples of nesting in a 2Code program. Compare two example programs that both have nesting and are trying to achieve • the same outcome. Identify what happens if a timer is nested inside a **when clicked** event command and know that the timer will only initiate after the **when clicked** command has run. • Test what happens when changing how a program is nested. Examples could include moving a timer so that it is nested within a timer that is currently nested within a when clicked command and comparing how it executes. • Use the knowledge of nesting to help debug a program that isn't working as intended.

Unit 3.2 – Online Safety

NATIONAL CURRICULUM LINKS	**Dominant strand for this unit: Digital Literacy** • Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact. **There will be elements from the other two strands due to the nature of the computing curriculum.**

Declarative - By the end of the unit the students **will know that**:	**Procedural** – By the end of the unit the students **will know how to**:
• Passwords are private and should never be shared.	• Take steps to keep a password safe. • Set a password featuring a mix of letters, numbers and special characters. • Set different passwords for different sites.
• Blogs can help us to communicate our thoughts and ideas.	• Use a blog or vlog to communicate ideas and thoughts. • Contribute to a class blog.
• Not everything online is factually correct, and some websites can be referred to as spoof websites.	• Ascertain which information in a website maybe fake, • Look for alternative ways to check the validity of information. • Consider why spoof websites exist.
• PEGI / BBFC ratings exist to keep young people safe and steps can be taken should students see inappropriate content.	• Consider what content may be deemed inappropriate. • Check PEGI / BBFC ratings to see if chosen media are suitable. • Talk to a trusted adult about what they have seen or heard if inappropriate content or contact makes them feel uncomfortable.

Unit 3.3 – Spreadsheets

NATIONAL CURRICULUM LINKS	**Dominant strand for this unit: Information Technology** • 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. **There will be elements from the other two strands due to the nature of the computing curriculum.**

Declarative - By the end of the unit the students **will know that**:	**Procedural** – By the end of the unit the students **will know how to**:
• Graphs can be generated from data within a sheet. If data is changed on the sheet, then the graph automatically updates to recognise these amendments. .	• Recall the different range of graphs and charts they have come across in other subjects as well as computing including pie and bar. • Enter data into a table format in a spreadsheet. • Select all the data in the table. • Select the chart tool. • Give the table a title. • Label the chart axis. • Add a title to the chart. • Edit data in a table and see how the chart changes automatically.
• The more than, less than and equals tools serve a purpose to define a number.	• Link their knowledge of <,> and = to spreadsheets • Drag numbers into a row so the appropriate sign lights up on the screen using the move tool. • Solve problems using the <,> and = tool. • Create a simple multiplication formula.

• Cells all have their own individual address. They are referenced using letters and numbers.	• Switch to advanced or formula mode in a spreadsheet program. • Read a cell address using column: row cell address. • Click in a given cell by using the cell address. • Complete a task to show their knowledge of cell addresses.

Unit 3.4 – Touch Typing

NATIONAL CURRICULUM LINKS	**Dominant strand for this unit: Information Technology** • 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. **There will be elements from the other two strands due to the nature of the computing curriculum.**

Declarative - By the end of the unit the students **will know that**:	**Procedural** – By the end of the unit the students **will know how to**:
• Typing is the action or skill of writing something by means of a keyboard (physical or virtual) and that it is important to have a good posture when typing.	• Check that posture is correct when typing. • Position equipment correctly so that eyes are level with monitor. • Place feet on the floor. • Position wrists so that they are not touching anything when typing.
• Home, top and bottom row keys are areas on a keyboard where specific keys are located.	• Locate the home, top and bottom keys. • Open activities in 2Type referencing the keyboard guide to support recognition of using the correct key when typing letters.
• To be an efficient at typing hands should be positioned correctly on a keyboard and that the left and right hands should work independently of each other.	• Use the left hand to type letters. • Use the right hand to type letters. • Position the left and right hands correctly. • Build up to combing left and right hand use to type words.

.5 Email

NATIONAL CURRICULUM LINKS	**Dominant strands for this unit: Digital Literacy & Computer Science** • Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact. • 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. **There will be elements from the other two strands due to the nature of the computing curriculum.**

Declarative - By the end of the unit the students **will know that**:	**Procedural** – By the end of the unit the students **will know how to**:
• There are different methods of communication and they each have strengths and weaknesses.	• Present different methods of communication on mind mapping tool. • Explain the advantages and disadvantages of each method. • Discuss the development of newer communication methods and how they came to being.
• Emails are electronic versions of letters, and they can be sent and received almost instantly to anyone with an email address.	• Open 2Email. • Identify key areas and functions: Inbox, alerts, reply, formatting tools. • Open an email and reply to it. • Compose an email including address, subject and message.
• It's important to use email systems safely and that there are things people can do to try to keep themselves safe.	• Recognise a concerning email/contact. • Report a concern to a teacher verbally as well as the report to teacher feature in 2Email.

	• Discuss the disadvantages of email in regard to safety. • Identify what a trusted contact is. • Limit the information shared using email. • Recognise personal and private information and how to distinguish between them. • Use the draft feature to review messages before sending them.
• Pictures, documents and other file types can be attached to emails.	• Identify the attachment icon. • Select files to attach to an email and send. • Be cautious of email received that have an attachment. • Discuss the advantages and disadvantages of being able to send attachments with emails.
• Address books can be made in email clients which store known contacts' email addresses. When sending an email we can use an address and send to multiple people.	• • Use the address book within 2Email to find contacts. • Send an email to multiple contacts using the address book. Use carbon copy correctly and explain scenarios of when this might be useful. • Use blind carbon copy and discuss scenarios of when this might be useful.

.6 Branching Databases

NATIONAL CURRICULUM LINKS	**Dominant strand for this unit: Information Technology** • 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. **There will be elements from the other two strands due to the nature of the computing curriculum.**

Declarative - By the end of the unit the students **will know that**:	**Procedural** – By the end of the unit the students **will know how to**:
• A database is a collection of data organised in a way that it can be searched, and information found easily.	• Explain what a database is. • Provide examples of common uses of a database such as the school's attendance database.
• Objects can be sorted using yes/no questions and relate this to how computer binary databases work.	• Explain binary databases are also known as branching databases due to the branch like structure. • Identify questions that can be used to sort physical objects. • When a question is asked their can only be two possible answers. • Sort physical objects using appropriate yes/no questions. • Develop questioning to include more/less.
• Branching databases can be created using programs such as 2Question.	• Locate and open 2Question. • Add record cards within 2Question using a plan. • Insert question texts and choice button texts for each card. • Include an image for each card. • Use the final answer card option for end of a branch.

• It is important to test and debug if needed when creating branching databases so that they work as intended.	• Plan a branching database. • Use 2Question to create own branching database.

	• Work through all routes on the database and test whether it works as intended. • Identify errors. • Fix errors and test again.

.7 Simulation

NATIONAL CURRICULUM LINKS	**Dominant strand for this unit: Information Technology** • 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. **There will be elements from the other two strands due to the nature of the computing curriculum.**

Declarative - By the end of the unit the students **will know that**:	**Procedural** – By the end of the unit the students **will know how to**:
• Computer simulations are programs that model real-life situations. They allow people to test various scenarios out that might be too expensive or dangerous to do in real life.	• Explain what computer simulations are and why they are useful. • Provide examples of computer simulations. • Give positives and negatives for simulations.
• Computer simulations can be realistic and also unrealistic depending on how well thought out they are.	• Explore a simulation in 2Simulate. • Make decision based on the options the simulation has given. • Find solutions to problems encountered when exploring a simulation.
• It is important to analyse and evaluate simulations to assess their usefulness and overall realism.	• Explore a simulation in 2Simulate. • Evaluate a simulation to determine its usefulness for purpose. • Evaluate the realism of a simulation.
• Simple simulations can be created using familiar software such as 2Create a Story.	• Plan and create a simple simulation in 2Create a Story. • Consider the relationships and rules in which the simulation uses.

Unit 3.8 Graphing

NATIONAL CURRICULUM LINKS	**Dominant strand for this unit: Information Technology** • 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. **There will be elements from the other two strands due to the nature of the computing curriculum.**

Declarative - By the end of the unit the students **will know that**:	**Procedural** – By the end of the unit the students **will know how to**:
• Computer programs such as 2Graph can be used to present data in more meaningful ways.	• Open 2Graph file with prepopulated data. • Compare how the data is presented in the table and the graph. • Edit an existing graph to show updated information that has been recorded.
• It's important to use the most appropriate graph type according to the information entered into it.	• Recognise the different types of charts that can be used to display data recorded within 2Graph. • Compare using different charts for data entered into 2Graph. • Identify the most suitable graph to display the data. • Explain why some charts are more suitable than others for displaying the data.

• Graphing programs can be used to help solve questions.	• Investigate a topic such as the number of times a particular number lands when a dice is rolled x times. • Collect data in a suitable table. • Record the collected data into 2Graph. • Include accurate labels and a title. • Answer questions from the investigation using the graph created.

3.9 Presenting with PowerPoint

NATIONAL CURRICULUM LINKS	**Dominant strand for this unit: Information Technology** • 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. **There will be elements from the other two strands due to the nature of the computing curriculum.**

Declarative - By the end of the unit the students **will know that**:	**Procedural** – By the end of the unit the students **will know how to**:
• Presentation software is a way of creating and displaying information to an audience that is clear and engaging.	• Explain what Microsoft PowerPoint is. • Locate and open Microsoft PowerPoint. • Identify some of the basic layout features of Microsoft PowerPoint.
• Simple presentations can be made quickly by using features such as textboxes, word art and images.	• Locate and click on blank presentation. • Delete existing text boxes on a blank slide. • Insert new text boxes manipulating size and position. • Insert word art into a presentation slide. • Insert images into a presentation slide.

Unit –

• Presentations can include additional slides, video and audio.	• Insert new slides. • Identify the media area in the menu ribbon. • Use the audio feature to record from an external microphone and insert on a slide. • Use the video feature to insert a video from stock, the device or an appropriate online video. • Resize and manipulate media content appropriately on a slide.
• Designs of slides can be changed.	• Identify the design area from the menu ribbon. • Explore the different design templates available.
	• Preview designs and apply one of choice to a presentation.
• Animations can be incorporated within a Microsoft PowerPoint presentation.	• Select an image on a slide. • Identify the animation area from the menu ribbon. • Preview different animation styles. • Apply an animation to an image.
• Transitions can be applied between slides.	• Select a slide that a transition is to be applied to. • Identify transitions from the menu ribbon. • Preview the transitions available. • Select and apply a suitable transition.
• Timings can be added to transitions and animations.	• Identify the timing settings. • Apply a duration to an animation. • Select when the animation is to initiate. • Apply a duration to a slide transition. • Select when you want the slide transition to occur; on click or set delay.

3.9 Presenting with Google Slides

NATIONAL CURRICULUM LINKS	**Dominant strand for this unit: Information Technology** • 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. **There will be elements from the other two strands due to the nature of the computing curriculum.**

Declarative - By the end of the unit the students **will know that**:	**Procedural** – By the end of the unit the students **will know how to**:
• Presentation software is a way of creating and displaying information to an audience that is clear and engaging.	• Explain what Google Slides is. • Open Google Slides. • Identify some of the basic features of Google Slides.
• Simple presentations can be made quickly by using features such as textboxes, word art and images.	• Locate and click on blank presentation. • Delete existing text boxes on a blank slide. • Insert new text boxes manipulating size and position. • Insert word art into a presentation slide. • Insert images into a presentation slide.

Unit –

• Presentations can include additional slides, video and audio.	• Insert new slides. • Identify the 'Insert' menu. • Use the audio feature to record from an external microphone and insert on a slide. • Use the video feature to insert a video from YouTube, URL or Google Drive. • Resize and manipulate media content appropriately on a slide.

• Shapes and lines can be added to slides.	• Identify shape button and line button. • Explore shapes and lines available and insert. • Format inserted shape and line by fill colour, border colour, border weight and border dash.
• Animations can be incorporated within Google Slides files.	• Select an image on a slide. • Locate 'Animation' menu. • Preview different animation styles. • Apply an animation to several images. • Select the order that animations are to be played in.
• Transitions can be applied between slides.	• Select slides that are to have transitions. • Locate 'Transition' menu. • Explore transitions available. • Adapt the speed of transition using the slider.
• Designs of slides can be changed.	• Identify the 'Themes' area. • Explore the themes available. • Click through themes and preview. • Apply theme to presentation.

For Support Please Contact

+44(0) 208 203 1781
support@2simple.com

+61 (03) 8321 4990
info@2simple.com.au

+27(0) 10 201 7015
info@2simple.co.za

Unit

3.10 – micro:bits

NATIONAL CURRICULUM LINKS	**Dominant strand for this unit: Computer Science** • Use technology purposefully to create, organise, store, manipulate and retrieve digital content. • Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts. • Use sequence, selection and repetition in programs; work with variables and various forms of input and output. • Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs. **There will be elements from the other two strands due to the nature of the computing curriculum.**

Declarative - By the end of the unit the students **will know that**:	**Procedural** – By the end of the unit the students **will know how to**:
• A micro:bit is a tiny computer which needs instructions in code to make it work.	• Explain that a micro:bit is a piece of hardware that can have code created for it that makes use of its inputs and outputs. • Recognise and locate key hardware components on the micro:bit such as its display, speaker and accelerometer.
• A micro:bit can produce outputs.	• Identify and use code blocks that produce outputs. • Use **display text**, **show LEDs** and **play music** outputs in program to meet specific intentions. • Code a micro:bit to make different outputs happen depending on different inputs.

• A micro:bit can receive inputs.	• Identify and use code blocks that are associated with receiving inputs. • Use event commands: **when micro:bit button**, **when gesture** in programs to meet specific intentions.
	• Make a program that requires inputs (event commands as above) that produce an output.
• Code from the coding environment can be transferred onto a micro:bit.	• Use the simulator within the Freecode micro:bit environment to test code before transferring to micro:bit. • Use the transfer feature to move code onto a micro:bit.
• The order (sequence) of instructions is important when coding.	• Recognise how the order of code is essential in order to meet a program's intentions. • Use sleep command within a sequence of code to temporarily pause a program e.g. when creating an animation effect using LEDs. • Use the repeat forever command within a sequence of code to produce an infinite looping sequencing such as a beating heart animation.