LITTLETON GREEN COMMUNITY SCHOOL
COMPUTING

> *"As computing lead, my vision is that through the use of modern technology, we will raise the profile of ICT and the importance it plays in everyday lives, whilst maintaining a safe online environment in all subjects across the curriculum."*
>
> *Mr. G. Davies*
> *Computing Subject Lead*

Computing Curriculum Aims

- can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, **algorithms** and data representation

- can analyse problems in computational terms, and have repeated practical experience of **writing computer programs** in order to solve such problems

- can evaluate and apply information technology, including new or unfamiliar technologies, **analytically to solve problems**

- **are responsible, competent, confident and creative users of information and communication technology.**

EYFS and Computing

We understand how important it is that children develop their technology skills and will continue to use a range of technology to support and enhance learning in other areas of the curriculum. For example, the children will continue to use the Bee-Bots when learning about direction and will use iPads to listen to and watch animated stories, watch videos linked to our topics and play games to develop phonic and number skills.

In foundation stage, the children:
- Have daily access to a range of technology resources such as torches with switches, remote controlled cars, beebots, talking tins, voice-recording toys, as well as class ipads and interactive whiteboards.
- Use a range of technology resources to support learning in other areas of the curriculum.
- Are taught how to use the resources for different purposes eg ipads to watch videos, play games, take photographs and listen to stories.

The early learning goals that previously linked to computing (EYFS technology) have been removed from the Early Years Foundation Stage Framework 2020. As we follow the Birth to 5 Matters framework, we still cover the technology requirement as we believe children should be fluent in computer literacy and all-important e-safety when living in a technological world.

What does Computing look like at Littleton Green Community School?

Each topic begins with sharing a 'Big Question'. This enables the pupils to see the bigger picture and gives purpose to what they are learning.

BIG QUESTION

ENDPOINT ASSESSMENT

This is a product to showcase the learning which has taken place and the knowledge learnt. It can involve a prior session to create success criteria based on the concepts and a critical evaluation lesson.

ENDPOINT EXPLORATION

At the beginning of the topic, teachers share a WAGOLL (What a Good One Looks Like). Here the learning process is explored and the children have the opportunity to input to their journey to the endpoint.

THE LEARNING JOURNEY

A series of learning opportunities where concepts are built on. Here the meaning is made and connections are formed.

ACTIVATING PRIOR KNOWLEDGE

Throughout the topic, there are built in opportunities for children to access their prior knowledge to help them make connections and make the learning stick. This may be through key vocabulary, knowledge organisers, carefully thought out questioning and more.

KNOWLEDGE ORGANISERS

A resource which is available to children for them to learn the 'sticky knowledge' to master the learning. These are working documents that the children refer to and add their new learning to.

KEY VOCABULARY

At the start and throughout the learning journey, children will be taught key vocabulary need to access the learning and secure the key knowledge .

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START

Early Years

USING TECHNOLOGY

EYFS

- Use a range of technology resources
- Use resources for different purposes

Year 1

1

- How do we use technology safely?
- What steps are needed to program a set of instructions?
- How can we show collected data?
- How does the order of instructions affect a result?
- What is an algorithm?
- What is the purpose of animation?
- What is needed to create a coded scene?
- How does a formula allow a spreadsheet to work?
- What is meant by the word 'technology'?

Year 2

2

- How do we safely test a program?
- What makes a digital footprint?
- How do you create a table of data using a spreadsheet?
- How does the search tool help us to find information?
- What is the purpose of navigating the web?
- What does a piece of surreal art contain?
- What is required to create a sound?
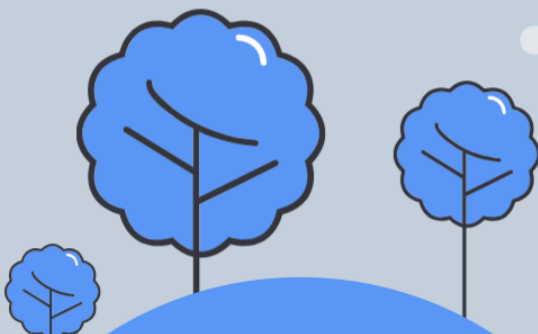- How can we organise information using digital content?

Year 3

3

- Why is planning essential before creating a program?
- How can emotions be affected by inappropriate content/games?
- Can I describe cells using their addresses?
- What is the purpose of keys on a keyboard?
- How is email an effective form of communication?
- Are branching databases the best way to display information?
- Why is simulation used in an adventure story?
- Why are charts the best way of displaying results?
- What makes a presentation more engaging?
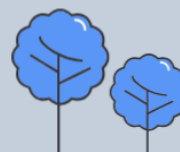- What is an output and how can it be used?

COMPUTING

Cont...

Year 4

4

- Do all games need a score?
- How can we keep safe online?
- Can I create an interactive spreadsheet to teach place value?
- Does font and style affect the impact of text?
- Can I create a procedure?
- What is stop motion animation?
- What are reliable information sources?
- What are the parts of a computer?
- What is needed to create an electronic piece of music?
- How is artificial intelligence being used to create music and art?
- Can I create a computer simulation of a real world tool?

Year 5

5

- How can string be used in computing?
- What are the positives and negatives of using online communication?
- Why are spreadsheets fantastic for organisation?
- How do databases store data safely?
- Why do games have to be critiqued before they are released?
- What are the possibilities of 3D printing?
- How can we use concept maps to present to an audience?
- How does the page layout determine a piece of writing?
- How do we program an external device using a host?

Year 6

6

- How do we make a text adventure more interactive?
- Why is screen time important and what does it mean?
- How a re spreadsheets shaping the future of organisation?
- What is the improtance of commenting on blogs?
- How do we continually develop our programs?
- What does the future hold for the internet?
- How does a survey gather more information thatn scores?
- How does a variable control game states?
- Why are spreadsheets good for real-life situations?

WHOLE SCHOOL OVERVIEW OF CONCEPTS			
EYFS			
Using technology			
Have daily access to a range of technology resources such as torches with switches, remote-controlled cars, beebots, talking tins, voice-recording toys, as well as class ipads and interactive whiteboards. Use a range of technology resources to support learning in other areas of the curriculum. Are taught how to use the resources for different purposes eg ipads to watch videos, play games, take photographs and listen to stories.			
Key Stage 1			
Algorithms	**Create programs**	**Reasoning**	
Pupils should be taught to understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions	Pupils should be taught to create and debug simple programs	Pupils should be taught to use logical reasoning to predict the behaviour of simple programs	
Using technology	**Uses of IT beyond school**	**Safe use**	
Pupils should be taught to use technology purposefully to create, organise, store, manipulate and retrieve digital	Pupils should be taught to recognise common uses of information technology beyond school	Pupils should be taught to 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	
Key Stage 2			
Create programs	**Develop programs**	**Reasoning**	**Networks**
Pupils should be taught to design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts	Pupils should be taught to use sequence, selection, and repetition in programs; work with variables and various forms of input and output	Pupils should be taught to use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs	Pupils should be taught to 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
Search engines	**Using programs**	**Safe use**	
Pupils should be taught to use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content	Pupils should be taught to 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	Pupils should be taught to use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact	

Year group Coverage and Progression of Knowledge

EYFS

Key Concepts	
Using Technology	• Have daily access to a range of technology resources such as torches with switches, remote-controlled cars, beebots, talking tins, voice-recording toys, as well as class iPad and interactive whiteboards. • Use a range of technology resources to support learning in other areas of the curriculum. • Are taught how to use the resources for different purposes e.g., iPads to watch videos, play games, take photographs and listen to stories.

	Block 1		Block 2		Block 3	
Reception	**Journeys**	**Record it**	**Black and White Photos**	**A Year on the farm**	**Safari Animals**	**Photo Booth**
PRODUCT	*Create simple programs.*	*Use technology to record their work and ideas.*	*Use age-appropriate software to create images and record sounds and videos*	*Use age-appropriate software independently.*	*Navigate to find digital content, in digital folders and online, with supervision.*	*Use age-appropriate software to create images and record sounds and videos.*

Transition to KS1	*Through our bespoke curriculum, Reception children are introduced to the basics of computing in a fun and engaging way, preparing them for Key Stage 1. They begin by using Purple Mash, an interactive platform that allows them to explore a range of creative and educational tools. E-safety sessions are incorporated to help children understand how to use technology safely and responsibly. Through hands-on activities with Bee-Bots, they learn the fundamentals of algorithms and simple programming, building their problem-solving skills. Children also have access to a variety of technological resources, such as computers, tablets, and interactive whiteboards, to explore their different uses. As part of their learning, they are introduced to the history of technology, gaining an understanding of how technology has evolved over time. Additionally, they explore e-books, learning how digital books work, and experiment with software that allows them to alter voices and pictures, sparking their creativity and imagination.*

YEAR 1			
Key Concepts	**Digital Literacy**	**Computer Science**	**Information Technology**
Online Safety **How do we use technology safely?**	• Knows how to log in safely. • Knows how to navigate to a document area where saved work by child can be found. • Knows how to use search to locate applications or resources on a platform such as Purple Mash. • Knows how to enhance work by adding multimodal items such as text and images. • Knows how to open, save and print work. • Knows the importance of logging out of an account.		
	PRODUCT	**CULTURAL CAPITAL**	**KEY VOCABULARY**
	Show evidence of saved work and know why logging in and out is important.	*NSPCC online safety assembly, termly online safety quizzes, sharing weekly updates from Dojo.* *Significant company – NSPCC.*	*log in, log out, password, private, home screen, my work area, avatar, icon, typing, saving, log out.*
Grouping and Sorting **What steps are needed to program a set of instructions?**		• Knows how to sort items using a range of criteria. • Knows how to use software for grouping items such as tools within Purple Mash. • Knows that computers need steps of instructions in order in their programs.	
	PRODUCT	**CULTURAL CAPITAL**	**KEY VOCABULARY**
	Think carefully about what I know about each object.	*Using Bee Bots, iPads.* *Significant person – Bill Gates.*	*sort, criteria, describe, groups, algorithm.*
Pictograms **How can we show collected data?**			• Knows that data can be represented in a picture format e.g. pictogram. • Knows how to contribute to a class pictogram. • Knows how to use a software such as 2Count to record results of an experiment into a pictogram format.
	PRODUCT	**CULTURAL CAPITAL**	**KEY VOCABULARY**
	Represent results using a pictogram.	Road traffic survey, iPads for creating grids. Significant person - Bill Gates.	*data, pictogram, collect data, record results, compare, totals.*
Lego Builders **How does the order of instructions affect a result?**		• Knows how to compare the effects of adhering strictly to instructions when completing tasks without complete instructions. • Knows how to follow and create simple instructions on the computer. • Knows that the order of instructions affects the end result for a given instructional task.	
	PRODUCT	**CULTURAL CAPITAL**	**KEY VOCABULARY**
	Program a robot.	*Using Lego kits, iPads.* *Significant person – Ole Kirk Kristiansen.*	*instructions, algorithm, program, machine, computer, recipe, debugging, code, sequence.*

Maze Explorers **What is an algorithm?**		• Knows the functionality of the direction keys in 2GO. • Knows how to create and debug a set of simple instructions (algorithm). • Knows how to use the additional direction keys within 2Go as part of an algorithm. • Knows how to change and extend the algorithm list in 2Go.	
	PRODUCT	**CULTURAL CAPITAL**	**KEY VOCABULARY**
	Create a simple set of instructions.	*Bee Bots wooden maze, iPads. Significant person - Alan Turing.*	*algorithm, left and right, undo, delete, unit, instruction, direction, challenge, route, command, background.*
Animated story books **What is the purpose of animation?**			Knows what e-books are. • Knows of software such as 2Create a Story that allows users to create interactive stories. • Knows how to add animation to an interactive story. • Knows how to add sound, including voice recordings and music to a story they have created using software. • Beginning to know how to work on more complex digital stories, including adding backgrounds, copying and pasted pages. • Knows how to share digital stories with others such as using Digital Display Boards.
	PRODUCT	**CULTURAL CAPITAL**	**KEY VOCABULARY**
	Use the function of copy and paste.	*Illustrator visit (to show off how books come to life)., BBC Bitesize – Dick and Dom bringing books to life. (https://www.bbc.co.uk/programmes/p011nz7m). Significant person - Mark Zuckerberg.*	*background, clip-art gallery, font, copy, paste, features, edit.*
Coding **What is needed to create a coded scene?**		• Knows what instructions are and can predict what might happen when they are followed. • Knows how to plan and make a simple computer program e.g. fish moves right, crab moves up. • Knows what objects, actions and backgrounds are within a coding environment. • Knows what an event is and knows how to use an event to control an object. • Beginning to know how code executes when a program is run.	
	PRODUCT	**CULTURAL CAPITAL**	**KEY VOCABULARY**
	Create a free code scene independently.	*iPads, Bee Bots. Significant person – Jack Kilby.*	*object, action, event, execute, background, scene, plan.*
Spreadsheets **How does a formula allow a spreadsheet to work?**			• Knows what a spreadsheet program environment looks like including cells, rows and columns. • Knows basically what a spreadsheet program can help do. • Knows how to enter data into spreadsheet cells. • Knows how to add images to cells. • Knows how to use some tools within spreadsheets e.g. with 2Calulate can use lock cell, move cell, speak and count.
	PRODUCT	**CULTURAL CAPITAL**	**KEY VOCABULARY**
	Create a spreadsheet with the given formulas.	*iPads, Exploring different methods of data handling. Significant person – Charles Babbage.*	*button, clip-art, image, move cell, lock cell, select, count tool, speak tool, value.*

Tech Outside School **What is meant by the word 'technology'?**	• Knows that technology is a use of knowledge to invent new devices or tools. • Knows that throughout history, technology has made people's lives easier. • Knows that technology is used within school and outside of school. • Knows where examples of technology can be found both in and out of school.		
	PRODUCT	**CULTURAL CAPITAL**	**KEY VOCABULARY**
	Show what technology is all around us.	*Visit to the Think Tank or Space Centre.* *Significant person – Hedy Lamarr.*	*technology, computer.*

YEAR 2			
Key Concepts	**Digital Literacy**	**Computer Science**	**Information Technology**
Coding **How do we safely test a program?**		• Knows what an algorithm is and can explain that it is a set of instructions and that algorithms follow a sequence. • Knows how to create a computer program using an algorithm. • Knows how to create a computer program from a given design. • Knows that collision detection is an event type in coding. • Knows how to design an algorithm that follows a timed sequence. • Knows that different objects within the coding environment have different properties. • Knows that there are different events in coding and knows what some of these events are. • Knows the function of buttons in the coding environment.	
	PRODUCT	**CULTURAL CAPITAL**	**KEY VOCABULARY**
	Create an algorithm to test programs.	*iPads, Looking at a range of instructions on apps.* *Significant person – Alun Turing.*	*run, execute, bug, debug, debugging.*
Online Safety **What makes a digital footprint?**	• *Knows how searches can be refined when searching digitally and therefore attempts refining when searching.* • *Knows that digitally created work can be shared with others e.g. Purple Mash Display Boards.* • *Has knowledge and understanding about sharing more globally on the Internet.* • *Knows that email is a type of communication tool.* • Knows how to open and send simple online communications in the form of email e.g. 2Email (virtual email client). • Knows that there is an appropriate way to communicate with others in an online situation. • Knows that information put online leaves a digital footprint. • Knows some steps that can be taken to keep personal data and hardware secure.		
	PRODUCT	**CULTURAL CAPITAL**	**KEY VOCABULARY**
	Explain what makes a digital footprint	*iPads, Internet Safety Day, NSPCC online safety assembly.* *Significant company - NSPCC*	*email, attachment, reply, personal information, private information, digital footprint, protection, identifying, secure.*
Spreadsheets **How do you create a table of data using a spreadsheet?**			• Secures knowledge from the prior year when • spreadsheets were introduced (See unit 1.8). • Knows how to use prior learning to perform composite task of creating a counting machine using software such as 2Calculate (image, lock move cell, speak and count tools). • Knows how to copy, cut and paste in spreadsheet software such as 2Calculate. • Knows what totaling tools are and how to use them. • Knows how to use a spreadsheet to perform calculations for purpose. For example, adding and totalling money. • Knows how to use some tools within a spreadsheet to support calculations. For example, using the equals tool in

			2Calculate to check calculations.
			• Knows how to create a manual block graph within a spreadsheet from data.
	PRODUCT	**CULTURAL CAPITAL**	**KEY VOCABULARY**
	Create a block graph manually.	*Different apps, Staffs Tech. Significant person – Ada Lovelace.*	*price, coins, equals, equals tools, addition, data, table, block graph, label.*
Questioning **How does the search tool help us to find information?**			• Knows that pictograms provide limited information. • Knows that there are other data handling tools that can give more information than pictograms. • Knows how to use yes/no questions to separate information. • Knows how to construct a binary tree to identify items. • Knows how to use a binary tree database (such as 2Question), to answer questions. • Knows how to use a database to answer more complex search questions. • Knows how to use a search feature at a basic level when trying to locate data within a database such as 2Investigate.
	PRODUCT	**CULTURAL CAPITAL**	**KEY VOCABULARY**
	Use questioning to organise a database.	*iPads, use of software.* *Significant person - Larry Page.*	*binary tree, database, record, field, search.*
Effective Searching **What is the purpose of navigating the web?**	• Knows the meaning of key Internet and searching terms. • Knows the basic parts of a web search engine page. • Knows how to navigate a web search results page. • Knows how to search the Internet to some degree for answers to a quiz. • Knows the premise of what effective Internet searching is.		
	PRODUCT	**CULTURAL CAPITAL**	**KEY VOCABULARY**
	Show how to navigate around the internet.	*iPads, use of software.* *Significant person – Tim Berners-Lee.*	*search engine, internet, world wide web, web site, web page.*
Creating pictures **What does a piece of surreal art contain?**			• Knows the purpose and benefits of painting software tools such as 2Paint a Picture. • Knows how to recreate Impressionism, surrealism and Pointillism using features within 2Paint a Picture. • Knows how to reproduce the style of William Morris by using repeating patterns, manipulating patterns and adding multiple effects in painting software such as 2Paint a picture.
	PRODUCT		**KEY VOCABULARY**
	Create my own piece of surreal art.	*VR Experience, iPads, online art gallery.* *Significant person – Bill Gates.*	*art, style, surrealism, eCollage, stamps, clip-art.*
Making Music **What is required to create a sound?**			• Knows how to make forms of music (digitally) using age-appropriate software such as 2Sequence. • Knows how to edit and combine sounds using 2Sequence. • Knows how to refine composed music. • Knows how to upload/import and record sounds beyond the software environment.
	PRODUCT		**KEY VOCABULARY**
	Create my own recorded sound.	*iPads, online music, varied apps/software.*	*soundtrack*

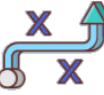|		*Significant person – Dr. Gerhard Lengeling.*	
Presenting Ideas **How can we organise information using digital content?**			• Know that digital content can be presented in many different forms e.g. stories. • Know how to use presentational or interactive software such as a quiz, making improvements to it based on people feedback. • Know that data can be structured in tables to make it useful for an audience. • Know how to add images such as clipart and photos to presentational software. • Know how to collect, organise and present data and information in digital format.
	PRODUCT	**CULTURAL CAPITAL**	**KEY VOCABULARY**
	Collect and organise information through digital content.	*iPads, apps, alternative software.* *Significant person – Bill Gates.*	*mind map, quiz, fact file, presentation.*

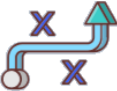| YEAR 3			
Key Concepts	**Digital Literacy**	**Computer Science**	**Information Technology**
Coding **Why is planning essential before creating a program?**		• Knows what a flowchart is and how flowcharts are used in computer programming. • Knows how to use a flowchart to create a computer program. • Knows that there are different types of timers used in coding environments such as 2Code. • Knows which timer should be used for a given purpose. • Know what a repeat command is and how to use the repeat command. • Know how to create a range of programs using coding knowledge. • Know how to run, test and debug their own programs. • Know what nesting is and that this should be considered when debugging. • Know how to change attributes/properties of any objects in a program they have made.	
	PRODUCT	**CULTURAL CAPITAL**	**KEY VOCABULARY**
	Create a table with the correct attributes to organise objects.	*iPads, Scratch, apps, alternative software.* *Significant person – Jack Kilby.*	*object, run, scene, attributes, sequence, predict, run, test, debug, debugging, click events, alert.*
Online Safety **How can emotions be affected by inappropriate content/games?**	• Knows what makes a safe password and how to keep it safe. • Knows the main outcomes of not keeping • passwords safe. • Knows all the common ways the Internet enables people to effectively communicate. • Know that a blog can be used to help communicate with a wider audience. • Know how to contribute to a blog with clear and appropriate messages. • Know that some information held on websites may not be accurate or true. • Beginning to know how to search the Internet and how to think critically about the results returned. • Know why there are age restrictions on digital media and devices. • Know where to turn to for help if they see inappropriate content or have inappropriate contact from others.		
	PRODUCT	**CULTURAL CAPITAL**	**KEY VOCABULARY**
	Explain cyberbullying and its effects in the social world.	*iPads, Internet Safety Day, Online safety quizzes.* *Significant company – NSPCC*	*internet, website, spoof, verify, reputable source, inappropriate, permission.*
Spreadsheets			• Know how to create tables of data within a spreadsheet. • Know how to use a spreadsheet program to automatically create charts and graphs from data. • Know how to use various features within a spreadsheet to support solutions to calculations. • For example, 'more than', 'less than', and 'equals'.

Can I describe cells using their addresses?			• Know how to describe a cell location in a • spreadsheet. • Know how to find specified locations in a spreadsheet.
	PRODUCT	**CULTURAL CAPITAL**	**KEY VOCABULARY**
	Recognise what a cell number is.	*iPads, use of different software, examples of databases in the real world.* *Significant person – Charles Babbage.*	*advanced mode, cell address, quiz tool.*
Touch Typing **What is the purpose of keys on a keyboard?**			• Know typing terminology including names of fingers. • Know the home, top and bottom row sections on a keyboard. • Knows the keys typed with left hand. • Knows the keys typed with right hand. • Knows the correct way to sit at a keyboard.
	PRODUCT	**CULTURAL CAPITAL**	**KEY VOCABULARY**
	Touch type using both hands.	*iPads, software, various keyboards.* *Significant person – Bill Gates.*	*posture, keys, typing.*
Email **How is email an effective from of communication?**	• Know the different methods of communication and • know the strengths and weaknesses of his form. • Know how to open and responding to email. • Know how to use an address book to write an • email. • Know how to use an email environment safely including the importance of the draft feature. • Know how to add attachments to an email. • Know what CC means and how to use it.		
	PRODUCT	**CULTURAL CAPITAL**	**KEY VOCABULARY**
	Respond to a series of email communications.	*iPads, software.* *Significant person – Mark Zuckerburg.*	*email, attachment, carbon copy (cc), blind carbon copy (bcc).*
Branching Databases **Are branching databases the best way to display information?**			• Know how to sort objects using just YES/NO. • Know how YES/NO questions are structured and answered. • Know how to complete a branching database. • Know how to edit and adapt a branching database. • Know how to create a branching database including debugging it.
	PRODUCT	**CULTURAL CAPITAL**	• **KEY VOCABULARY**
	Create a branching database.	*iPads, software.* *Significant person – Charles Babbage*	*data, database, branching database, binary tree, debugging.*
Simulations			• Know that a computer simulation can represent real and imaginary situations. • Know advantages and problems of using • simulations. • Know how to use a simple simulation to try out different options and test predictions. • Begin to know how to evaluate simulations by comparing them with real simulations and considering their usefulness.

Why is simulation used in an adventure story?	PRODUCT	CULTURAL CAPITAL	KEY VOCABULARY
	Create own simulation.	*iPads, use of software.* *Significant person – Bill Gates.*	*solution, realistic, unrealistic, analysis, decision, evaluation.*

Graphing Why are charts the best way of displaying results?			• Know how to set up a graph with a given number of fields using graphing software (2Graph). • Know how to enter data for a graph. • Know how to select the most appropriate chart type for their data and explain reasoning. • Know how to sort data in graphing software to enable easier analysis.
	PRODUCT	**CULTURAL CAPITAL**	**KEY VOCABULARY**
	Display a range of results using different charts.	*iPads, use of software.* *Significant person – Bill Gates.*	*graph, chart, investigation, tally chart, survey.*

Presenting What makes a presentation more engaging?			• Know what a presentation is and how it can be used. • Know how to add pages/slides, text and shapes to pages, and also format them. • Know how to add media such as images, audio and videos. • Know how to use effects and features such as animations and slide transitions. • Know how timings can help when presenting and know how to include them in presentations. • Know how to effectively present to an audience using presentation software.
	PRODUCT	**CULTURAL CAPITAL**	**KEY VOCABULARY**
	Create a presentation.	*iPads, use of software, PowerPoint.* *Significant person – Bill Gates.*	*review, sound affect, duration, timings, animation, transition, preview, media, editing, slide, audio, presentation, textbox, font formatting, word art.*

Micro:bit What is an output and how can it be used?		• Know that a micro:bit is a small computer that needs instructions (code) in order to make it work. • Know that is has an LED display output that can be used to represent pictures, numbers and words. • Know how to use the simulator to test code. • Know how to transfer code from the coding environment onto a micro:bit. • Know how to code the micro:bit using Free Code for LED outputs and sound outputs. • Know how to code the micro:bit using Free Code so it can receive inputs from its buttons and accelerometer. • Know how to code the micro:bit to create events such as playing a tune when an input is detected.	
	PRODUCT	**CULTURAL CAPITAL**	**KEY VOCABULARY**
	Creating an algorithm and applying it to an external device.	*iPads, use of software, Micro:bits.* *Significant person – Jack Kilby.*	*input, algorithm, code, output, accelerometer, gestures, sound output, speaker.*

YEAR 4			
Key Concepts	**Digital Literacy**	**Computer Science**	**Information Technology**
Coding **Do all games need a score?**		• Begin to know what selection is in computer programming. • Know how an IF statement works. • Know how to interpret an IF statement and therefore know how to create a program that includes an IF statement. • Know how to use co-ordinates in computer programming. • Know what the 'repeat until' command is. • Know how an IF/ELSE statement works. • Know what a variable is in programming. • Know how to use variables within their programs. • To know how to create a playable game using a block coding environment.	
	PRODUCT	**CULTURAL CAPITAL**	**KEY VOCABULARY**
	Design and create a game with a score.	*iPads, Bee Bots, games, use of software.* *Significant person – Alan Turing.*	*Selection, 'If' statement, 'If/Else' statements, Variable, Co-ordinates, Timer, Repeat until, Inputs, Alert, Prompt.*
Online Safety **How can we keep safe online?**	• Know that information put online leaves a digital footprint or trail and can expand on prior years' scope of this fact. • Know some of the ways children can protect themselves from online identity theft. • Know that information put online by users could be used for identity theft. • Know the main risks and benefits of installing software and applications. • Know that copying work of others and presenting it as their own is plagiarism. • Knows the consequences of plagiarism. • Knows appropriate behaviour when participating or contributing to collaborative online projects for • learning. • Know some of the main positive and negative influences technology has on health and the • environment. • Knows the importance of balancing screen time with non-screen time.		
	PRODUCT	**CULTURAL CAPITAL**	**KEY VOCABULARY**
	Give reasons for limiting screen time.	*iPads, use of software, quizzes, stories.* *Significant company – NSPCC.*	*Plagiarism, Watermark, Citation, Copyright, Collaborate, Data analysis, Collaborative database.*
Spreadsheets **Can I create an interactive**			• Know what cell formatting is. • Know how to format cells as currency, percentage, decimal or fraction. • Know how to use formula wizard tools. • Know how to combine spreadsheet tools to create a purposeful spreadsheet e.g. a timed times table test. • Know how to use a spreadsheet to model a real-life situation e.g. budget planner.

spreadsheet to teach place value?			• Know how to add a formula to a cell in order to create automatic calculations.
	PRODUCT	**CULTURAL CAPITAL**	**KEY VOCABULARY**
	Create a spreadsheet using place value.	*iPads, software, databases.* *Significant person – Ada Lovelace.*	*Place value, 'Is equals too' tool, Set image.*
Writing for different audiences **Does font and style affect the impact of text?**			• Know how font size and style can affect the impact of a text. • Know how to use a simulated scenario to produce a news report and campaign using technology.
	PRODUCT	**CULTURAL CAPITAL**	**KEY VOCABULARY**
	Creating a piece of writing for a campaign.	*iPads, software, apps.* *Significant person – Bill Gates.*	*Genre, Reporter, Campaign.*
Logo **Can I create a procedure?**		• Know the structure of the coding language of Logo. • Know how to input simple instructions in Logo language environment. • Know how to create letter shapes using Logo. • Know what the repeat function in Logo is and its usefulness. Use it to create shapes such as squares. • Know what procedures are and use this knowledge to build procedures in Logo.	
	PRODUCT	**CULTURAL CAPITAL**	**KEY VOCABULARY**
	Creating procedures whilst using 2Logo.	*iPads, use of software.* *Significant person – Hedy Lamarr.*	*Repeat, Procedure, SETPC, SETPS.*
Animation **What is stop motion animation?**			• Know how animations are created by hand. • Know how animations are created using computers. • Know what onion skinning is when referring to animation. • Know that animations can be enhanced using features in software such as background and sounds. • Know what 'stop motion' animation is.
	PRODUCT	**CULTURAL CAPITAL**	**KEY VOCABULARY**
	Create my own stop motion animation.	*iPads, use of software.* *Significant person – Sir Clive Sinclair.*	*Animation, Frame, FPS (Frame Per Second), Pause, Onion Skinning, Stop motion.*
Effective Searching **What are reliable information sources?**	• Know how to find information from a search results page. • Know how to search effectively to find out information. • Know how to identify if an information source is true and reliable.		
	PRODUCT	**CULTURAL CAPITAL**	**KEY VOCABULARY**
	Assess whether an information source is true or reliable.	*iPads, use of software.* *Significant person – Tim Berners-Lee.*	*Search engine, Results page, Internet, Key words, Reliability, Easter eggs, Balanced view.*
	• Know there are key parts that make up a computer. • Know what each of the key parts is called and the function of them.		
	PRODUCT	**CULTURAL CAPITAL**	**KEY VOCABULARY**

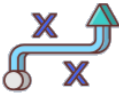| Topic			
Hardware Investigators — What are the parts of the computer?	*Able to identify all the parts of a computer.*	*iPads, use of software.* *Significant person – Charles Babbage.*	*Hardware, Software, Components, Peripherals, Motherboard, CPU, RAM, Hard Drive, Graphics Card, Network Card, Input Card.*
Making Music — What is needed to create an electronic piece of music?			• Know the main elements of music. • Know what rhythm and tempo is and able to use this knowledge to experiment with it. • Know that computers can be used to create music compositions. • Know how to apply knowledge of music to create own composition using software.
	PRODUCT	**CULTURAL CAPITAL**	**KEY VOCABULARY**
	Compose an electronic piece of music.	*iPads, software, apps.* *Significant person – Dr. Gerhard Lengeling.*	*Rhythm, Melody, Pulse, Tempo, Pitch.*
Artificial Intelligence — How is artificial intelligence being used to create music and art?			• Know the basic concept of what artificial intelligence is. • Know the key impact of artificial intelligence on daily life. • Know real-life examples of the current use of artificial intelligence. • Know how to think critically about artificial intelligence including its use in the future. • Know how to utilise artificial intelligence to create media such as images and music.
	PRODUCT	**CULTURAL CAPITAL**	**KEY VOCABULARY**
	Use AI to create images and music.	*iPads, use of software, Alexa, Siri.* *Significant person – Tim Cook.*	*Artificial Intelligence, Algorithm, Data.*
Physical Devices: micro:bit — Can I create a computer simulation of a real-world tool?		• Know how sensor inputs from the accelerometer can be used to detect movement. • Know that variables are containers for storing data that can be accessed and updated. • Know that inputs, outputs and computer code can work together to make control systems. • Know that logic can be used to make different outputs occur according to inputs by using IF/ELSE statements in code. • Know how to use infinite loops in control systems to monitor real-word environment changes.	
	PRODUCT	**CULTURAL CAPITAL**	**KEY VOCABULARY**
	Code a Micro Bit for a given purpose.	*iPads, use of software, Micro:bits.* *Significant person – Jack Kilby.*	*Accelerometer, Input, Output, LED, Repeat, Sensor, Conditionals, Gestures, Selection, Simulation, Logic.*

YEAR 5			
Key Concepts	**Digital Literacy**	**Computer Science**	**Information Technology**
 Coding **How can string be used in computing?**		• Begin to know how to simplify code in order to make own programming more efficient. • Know how to create a simple simulation using 2Code. For example, a traffic light sequence. • Know what decomposition and abstraction are in computer science. • Know the need to start coding at a basic level of abstraction to remove superfluous details from own programs. • Know how to use decomposition to make a plan of a real-life situation. • Know what a function is in coding and know how to use a function in own program to make it more efficient. • Know what different variable types are. • Know what strings are and how to use them. • Know how to set and change variable values in code. • Know some of the common ways that text variables can be used in programming. • Know and use concatenation in own programs.	
	PRODUCT	**CULTURAL CAPITAL**	**KEY VOCABULARY**
	Create a string and use it in a program.	*iPads, software, apps.* *Significant person –Jack Kilby.*	*string, random, debug, debugging, variable, value, 'if' statement, 'if/else' statement, tabs, concatenation, print to screen.*
 Online Safety **What are the positives and negatives of using online communication?**	• Know in more detail from prior learning of the impact that sharing digital content can have. • Know how to think critically about information they share online. • Know responsibilities they have for themselves and others regarding online behaviour. • Know and have developed knowledge from prior years about maintaining secure passwords. • Know about image manipulation using software and the advantages or disadvantages of this when shared online. • Know what is meant by appropriate and inappropriate text, photographs and videos. • Know about the impact of sharing media such as photographs and videos online. • Know about the importance of citing content online from others and know how to do this. • Know how to select keywords and search techniques to find relevant information to increase reliability.		
	PRODUCT	**CULTURAL CAPITAL**	**KEY VOCABULARY**
	Know when it is appropriate to use different forms of communication.	*iPads, software, apps.* *Significant company – NSPCC.*	*citation, reference, validity, reliability, plagiarism, bibliography, copyright, creative commons licence, communication.*

Spreadsheets **Why are spreadsheets fantastic for organisation?**			• Know how to use formulae within a spreadsheet to convert measurements of length and distance. • Know how to use more advanced formulae effectively. For example, to use formulae to calculate area and perimeter of shapes. • Know how to create formulae that use text variables. • Know how to use tools within a spreadsheet e.g. 2Calculate and the count tool to answer hypotheses. For example, to answer hypotheses about common letters in use.
	PRODUCT	**CULTURAL CAPITAL**	**KEY VOCABULARY**
	Create a spreadsheet to model a real-life situation.	*iPads, software, apps.* *Significant person – Charles Babbage*	*budget, profit, format cell, formula, totalling tool, variable, modelling, area, perimeter, advanced mode.*
Databases **How do databases store data safely?**			• Know how to search for information within a database. • Know the different ways to search for information in a database. • Know how to add information into a shared database. • Know how to create own database. • Know how to create new records. • Know what fields are and know how to correctly add information. • Know how to phrase questions so they can be correctly answered using a search of database.
	PRODUCT	**CULTURAL CAPITAL**	**KEY VOCABULARY**
	Design and create own database.	*iPads, software, apps.* *Significant person – Charles Babbage.*	*database, search, record, field, sort, group, arrange, statistics, database report, chart.*
Game Creator **Why do games have to be critiqued before they are released?**			• Know what some of the main elements are that make a successful game. • Know how to plan a playable game. • Know how to incorporate media such as sound and images. • Know how to manipulate media including adding animation. • Know how to successfully evaluate games.
	PRODUCT	**CULTURAL CAPITAL**	**KEY VOCABULARY**
	Create a game and critic your partners.	*iPads, software, apps.* *Significant person – Steve Jobs.*	*evaluation, theme, scene, texture, image, screenshot, quest, instructions, feedback, promotion.*
Modelling **What are the possibilities of 3D printing?**			• Know what modelling software is and the skills of computer aided design. • Know the effect of moving points when designing. • Know how to design a 3D model to fit certain criteria. • Know how to refine and print a model.
	PRODUCT	**CULTURAL CAPITAL**	**KEY VOCABULARY**
	Design a 2D net and print into 3D.	*iPads, creating 3D prints* *Significant person – Jack Kilby.*	*net, design brief, 3D printing, 3D views, net, pattern view, points.*
			• Know the need for visual representations when generating and discussing complex ideas. • Know the uses of a 'concept map'. • Know what is meant by 'concept map', 'stage', nodes' and 'connections.'

Concept Maps **How can we use concept maps to present to an audience?**			• Know how to create a concept map using software such as 2Connect. • Know that concept maps can be used to retell stories and information. • Know how to present a concept map to an audience.
	PRODUCT	**CULTURAL CAPITAL**	**KEY VOCABULARY**
	Create a concept map.	*iPads, maps, apps, software.* *Significant person – Bill Gates.*	*concept map, node, connections, collaborate, presentation mode, heading, sub-heading.*
Word Processing **How does the page layout determine the piece of writing?**			Know what a word processing tool is for. • Know how to create a word processing document. • Know how to alter the look of text and navigate around a document. • Know how to alter page layout including heading and columns. • Know how to add and edit images. • Know how to add features to enhance look and usability within a document. For example: textboxes, hyperlinks, contents pages. • Know how to use tables to present information.
	PRODUCT	**CULTURAL CAPITAL**	**KEY VOCABULARY**
	Format a page using a combination of images, headers and columns.	*iPads, apps, software.* *Significant person – Bill Gates.*	*text formatting, text box, captions, columns, word processing tool, document, front screen, zoom, selecting, highlighting, font, text formatting.*
External Devices **How do we program an external device using a host?**		• Know what a host means in the context of 2Code Purple Chip and relate this to everyday technology e.g. console and wireless controller. • Know what is meant by external device in relation to a host device. • Know what is meant by an application (App). • Know that a program can be created that will interact with an external device based on inputs and outputs available on the device and what has been coded on the host device. E.g. sound detection on the device sends input to the program triggering code to output alert noise to the device (Simple intruder alarm). • Know how interaction between an external device and host can be related to real world scenarios, recognising its usefulness. • Know the extent of functionality with Purple Chip including the code blocks available. • Know how to utilise the functionality of Purple Chip when designing own program.	
	PRODUCT	**CULTURAL CAPITAL**	**KEY VOCABULARY**
	Create a program that uses the sound and motion sensors of an external device.	*products, iPads, use of software.* *Significant person – Steve Jobs.*	*input, output, algorithm, action, debug, debugging, design, event.*

YEAR 6

Key Concepts	Digital Literacy	Computer Science	Information Technology
  Coding **How do we make a text adventure more interactive?**		• Know how to implement a game which includes timers and a score. • Know what the launch command is. • Build on knowledge of functions. • Know how to use multiple functions in own program. • Know how to arrange code in multiple tabs. • Know how to develop creativity when coding to generate novel effects. • Know the different options of generating user input in 2Code. • Know how to attribute variables to user input. • Know the need to code for all possibilities when using user inputs. • Know how 2Code can be used to make a text-based adventure game. • Know with improving understanding of how they can alter existing programs to reflect their own ideas. • Building on existing knowledge of debugging, children know how to debug more effectively.	
	PRODUCT	**CULTURAL CAPITAL**	**KEY VOCABULARY**
	Create a text adventure in 2Code.	*iPads, apps, software.* *Significant person – Alan Turing.*	*simulation, variable, selection, function, input, repeat until, text adventure.*
  Online Safety **Why is screen time important and what does it mean?**	• Know the benefits and risks of mobile devices broadcasting the location of the user/device, e.g., apps accessing location. • Know what secure sites are. • Know that secure sites will have industry standard seals of approval. • Build on knowledge of Digital Footprints. For example, know how and why people use their information. • Build on knowledge of appropriate online behaviours and how this can protect themselves and others from possible online dangers. For example, the dangers of promoting inappropriate content online. • Have greater knowledge of how to make more informed choices of how free time is used. • Know the effects on individual health when having too much screen time.		
	PRODUCT	**CULTURAL CAPITAL**	**KEY VOCABULARY**
	Use different sources of information to guide me online.	*iPads, apps, software, quizzes, stories, scenarios.* *Significant company – NSPCC.*	*screen time, data analysis, print screen, inappropriate, digital footprint, secure websites, location sharing, spoof, phishing, passwords, PEGI rating.*
 Spreadsheets			• Know how to create a spreadsheet to help answer a mathematical question relating to probability. • Know how to take 'copy' and 'paste' shortcuts. • Know how to problem solve during mathematical investigations when using spreadsheets by using tools such as the 'Count tool'.

How are spreadsheets shaping the future of organisation?			• Know how to create a spreadsheet to produce computational models. For example, creating a spreadsheet that works out discounts and final price sales. Children will know how to use advanced formula to assist with this. • Know how to use a spreadsheet to help plan actions. For example, create a spreadsheet to plan how to spend pocket money and the effect of saving.
	PRODUCT	**CULTURAL CAPITAL**	**KEY VOCABULARY**
	Show how a spreadsheet can be used in real life.	*iPads, apps, software.* *Significant person – Ada Lovelace.*	*profit, expenses, budget, advanced mode, formula wizard.*
Blogging **What is the importance of commenting on blogs?**			• Know the purpose of writing a blog. • Know the features of successful blog writing. • Know how to plan a blog. • Know how to write a blog. • Know how to write a blog post. • Know that the way information is presented within a blog has an impact upon the audience. • Know how to contribute to others' blogs. • Know the importance of having an approval process when creating blog content or modifying it. • Know from Online Safety knowledge that content within blogs applies. For example, children know the issues surrounding inappropriate posts and cyberbullying.
	PRODUCT	**CULTURAL CAPITAL**	**KEY VOCABULARY**
	Contribute to a class blog.	*iPads, use of software.* *Significant person – Mark Zuckerberg.*	*blog, vlog, archive, blog post, collaborate, nodes, connections, commenting, approval.*
Text Adventures **How do we continually develop our programs?**		• Know what a text-based adventure is. • Know how to convert a simple story with 2 or 3 levels of decision making into a logical design. • Know how to use the functionality of 2Create a Story Adventure mode to create, test and debug using plans. • Know the difference between a map-based game and a sequential story-based game. • Know how to use written plans to code a map-based adventure using 2Code. • Know how to recall existing knowledge to support coding a map-based adventure game. For example, using functions, two-way selection (IF/ELSE statements) and repetition.	
	PRODUCT	**CULTURAL CAPITAL**	**KEY VOCABULARY**
	Debug more complex code.	*iPads, use of software.* *Significant person – Bill Gates.*	*step through, selector, flow of control, variable, repeat while loop, function.*
		• Know the difference between the World Wide Web and the Internet. • Know what a WAN and LAN is and the key differences between them. • Know how a school network accesses the Internet. • Know the history of the Internet.	

Networks **What does the future hold for the internet?**		• Know some of the major changes in technology which have taken place in their lifetime.	
	PRODUCT	**CULTURAL CAPITAL**	**KEY VOCABULARY**
	Know what the future may hold for the internet.	*iPads, use of software, Staffs Tech talk, server room visit. Significant person – Tim Berners-Lee.*	*search engine, IP address, ISP (Internet Service Provider), DNS (Domain Name Server).*
Quizzing **How does a survey gather more information than scores?**			• Know how to use create activities for younger children using software such as 2DIY. • Know about different question types within quizzing software tools such as 2Quiz. • Know how to give and respond to feedback based on quizzes made. • Know how to create their own grammar games. • Know how to use multiple pieces of software to enhance a quiz. For example, creating a quiz that requires children to look up information on a database.
	PRODUCT	**CULTURAL CAPITAL**	**KEY VOCABULARY**
	To create a working survey.	*iPads, use of software.* *Significant person – Bill Gates.*	*data, survey, participants, data analysis.*
Binary **How does a variable control game states?**		• Know that all data in a computer is saved in the computer memory in a binary format. • Know that binary uses only the integers 0 and 1. • Know that we can relate 0 as an 'off' switch and 1 to an 'on' switch. • Know how to count up from 0 in binary using visual aids if required. • Know that bits are related to computer storage. • Know how to convert numbers to binary using the division by two methods. • Know how to use a converter tool to check binary conversions.	
	PRODUCT	**CULTURAL CAPITAL**	**KEY VOCABULARY**
	Represent the state of an object in a game.	*iPads, use of software* *Significant person – Jack Kilby.*	*variable, design, object, action, game states.*
Spreadsheets (alternative) **Why are spreadsheets good for real-life situations?**			• Know the uses of spreadsheets and familiar with the spreadsheet environment. • Know how to navigate around a spreadsheet using cell references. • Know key vocabulary: Cells, columns, rows, cell names, sheets, workbooks. • Know how to use a spreadsheet to carry out basic calculations including addition, subtraction, multiplication and division formulae. • Know how to use the series fill function. • Know that using formulae allows the data to change and the calculations to update automatically.

			• Know how to use a spreadsheet to solve a problem. • Know how to use the SUM function. • Know how to manipulate the way data is presented. For example, flash fill, convert text to tables, splitting cells, sorting data. • Know what is meant by a delimiter. • Know how to create formulae that deals with percentages, averages, max and min. • Know what range notation is. • Know that there are ways to present data graphically. • Know how to use charting features to create charts from data in cells. • Know how to use sparklines and data bars to illustrate data. • Know the advantages to using formulae when data is subject to change in a spreadsheet. • Know how to print spreadsheets.
	PRODUCT	**CULTURAL CAPITAL**	**KEY VOCABULARY**
	Model a real-life situation using a spreadsheet.	*iPads, use of software.* *Significant person – Charles Babbage.*	*computational model, budget, expense, formula, calculation, currency, profit.*