Curriculum Skills and Progression Map Computing

Curriculum Skills and Progression Map

Organisation of knowledge	Safe, effective and competent use of technology Personal use, devices, safety	Computer science and coding Algorithms, programming	Using information effectively Personal information, software/application knowledge
Relevant ELG			
KS1 readiness objectives	• Awareness of different technologies in and out of school • Awareness of the cause and effect of technology • Awareness of digital storage of information- photography, digital writing and research information • Awareness of input and outputs of devices • Can use technology to express creatively and constructively	• Awareness of the cause and effect of technology • Awareness of digital storage of information- photography, digital writing and research information • Awareness of input and outputs of devices • Can use technology to express creatively and constructively	• Awareness of different technologies in and out of school • Awareness of the cause and effect of technology • Awareness of digital storage of information- photography, digital writing and research information • Awareness of input and outputs of devices • Can use technology to express creatively and constructively

Reception

Curriculum Skills and Progression Map

Programmes of study **Year 1**	**Pupils should be taught:** ● **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** ● **use technology purposefully to create,** organise, **store, manipulate and retrieve digital content** ● **recognise common uses of information technology** beyond school ● **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.**

	Computer Science	**Information Technology**	**Digital Literacy**
Progression objectives **Year 1**	*To understand what algorithms are; how they are implemented on digital devices; and that programs execute by following precise and unambiguous instructions.* **To understand algorithms as a sequence of instructions in everyday context (e.g. recipe).** **To plan a sequence of steps to achieve a desired outcome (e.g. to make a sandwich/move a Code and Go Mice).** **To program a Code and Go Mice with single instructions.** *To create and debug simple programs* **To create a program for a Code and Go Mice by entering instructions one at a time.** *Use logical reasoning to*	*Use technology purposefully to create, organise, store, manipulate and retrieve digital content.* **To use technology effectively and confidently.** **To create a picture.** **To Log on to online platforms with support where needed (Numbots, Hour of Code)**	*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.* **To know that you need to keep yourself safe online.** **To tell an adult if they see something they shouldn't or feel unsafe.** **To know what personal information is and that it should be kept private.** **To not copy or share someone else's work without asking.**

Curriculum Skills and Progression Map

	predict the behaviour of simple programs. **To predict what a program will do.** *Recognise common uses of information technology beyond school.* **To understand what a computer is and how it works.**		
Assessment objectives **Year 1**	**Computer Science** **On-screen coding** - **Spring 1** To know that an algorithm is a set of instructions To create a simple algorithm to make a character move on screen To plan a sequence of steps to achieve a desired outcome To create a more advanced, multi-step algorithm To debug codes, spotting and fixing any errors To apply what I have learnt to create a sequence of instructions To evaluate my sequence, and debug if required **Sequencing with robots using Code and go Mice** - **Summer 1** To predict the outcomes of a command To match a command to an outcome To follow simple instructions To give directions to travel between two given points To predict the outcome of a series of forwards and backwards movements To experiment with turn and move commands to make a robot move	**Information Technology** **Understanding tech in our lives.** To explain how technology can help us To find examples of technology in the classroom To name the main parts of a computer/device To click and drag to make objects move on screen To say what a keyboard is used for To log in to code.org using a picture password To identify rules to keep us safe when we are using technology To give some examples of these rules **Digital painting** To make marks on a screen and explain which tools I used To draw lines on a screen To use the paint tools to draw a picture To use shape and line tools effectively To make appropriate colour choices To know that different paint tools do different jobs To change the colour and brush sizes To say whether I prefer painting using a computer or using paper	**Digital Literacy** **E-safety books and objectives:** **Autumn 1 - PenguinPig** *Online relationships* *Managing online information* **Autumn 2 - #Goldilocks** *Health, wellbeing and lifestyle* *Online reputation* **Spring 1 - Troll stinks!** *Online Bullying* *Health, wellbeing and lifestyle* *Self-image and identity* *Online Reputation* **Spring 2 - Chicken Clickin** *Online relationships* *Health, wellbeing and lifestyle* *Privacy and security* *Managing online information* **Summer 1 - Monkeycow** *Privacy and Security* *Health, wellbeing and lifestyle*

	To predict the outcome of a sequence involving multiple commands To explain what my program should do, and debug any errors To understand and identify multiple solutions to a problem	**Grouping data** To describe objects using labels To match objects to groups To identify the label for a group of objects To count, group and order objects To choose how to group objects To record how many objects are in a group To compare groups of objects and share findings **Digital photography** To recognise devices that can take a photograph To talk about how to take a photograph, and what makes a good photograph To take photographs in landscape and portrait mode, and explain why and when each should be used To identify what is wrong with a photograph To improve a photograph by retaking it To explore the effect that light can have on a photo To explain why a picture may be unclear To recognise that images can be changed To apply effects and mark ups to a photograph	<u>**Summer 2 - Once upon a time online**</u> *Health, wellbeing and lifestyle* *Self-image and identity* *Privacy and security*
Vocabulary **Year 1**	Information technology; object; properties (attribute); technology; algorithm; attribute (property); code; code snippet; command; computer; data; debugging; information; program; run (execute) Click to access vocabulary glossary	

Teaching Opportunities **Computer Science**	**Computer Science**	**Information Technology**	**Digital Literacy**
	Stand alone computing lessons: Algorithms:	**Stand alone computing lessons:**	**Stand alone computing lessons:** E-safety sessions.

Digital LIteracy **Information Technology**	- **On-screen coding** - **Spring 1** - **Sequencing with robots using Code and go Mice** - **Summer 1** - **Hour of code** - **Autumn 2** (December)	**Understanding tech in our lives.** Use a computer - understand the main parts (keyboard, mouse etc). Use personal log-in to access devices (where necessary) and for applications - TTRS / Numbots; Oxford Reading Buddies. **Autumn 1** **Digital painting** - manipulate or edit image; digital painting - **Autumn 2** **Digital photography.** Take photos using iPads. Retrieve images and edit/manipulate - **Summer 2** **Grouping data** - **Spring 2** -	- 2 per term. 1 completed in assembly and 1 in computing lessons every term. E Safety Books covered: **Autumn 1** **PenguinPig by Stuart Spendlow** - *Catfishing and not believing everything online* **Autumn 2** **#Goldilocks by Jeanne Willis** - *Over-sharing on social media and online Privacy* **Spring 1** **Troll Stinks! by Jeanne Willis** - *Cyber Bullying* **Spring 2** **KS1 and LKS2 - Chicken Clickin' (in-app purchases and cat fishing)** **Summer 1** **MonkeyCow by Stuart Spendlow** *Sharing passwords* **Summer 2** **Once upon a time online by David Bedford** *in-app purchases, cat fishing, reporting comments* - **Safer internet day** - **Spring 1**
Year 1	**Further teaching opportunities:** - English- write a set of instructions - DT - recipes? PE - instructions to get a child to complete a task	**Further teaching opportunities:** Art - **Digital painting** - manipulate or edit image; Kadinsky - **Autumn 2** **Maths** - properties of shape - **Grouping data** - **Spring 2** -	**Further teaching opportunities:** - RHE

		Digital photography. Take photos using iPads. Retrieve images and edit/manipulate - **Summer 2** - Science - environment seasonal change - add text to annotate - DT - take photo and add text to annotate Progressive document - each child. Use Word / slides (or similar) to create a digital piece of work - type a sentence or short piece of writing. Completed each term using work from any other subject - teacher selection	

Programmes of study Year 2	Pupils should be taught: ● 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 ● use technology purposefully to create, organise, store, manipulate and retrieve digital content ● recognise common uses of information technology beyond school ● 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.

Progression objectives Year 2 Computer Science Digital LIteracy Information Technology	Computer Science	Information Technology	Digital Literacy
	To understand what algorithms are; how they are implemented on digital devices; and that programs execute by following precise and unambiguous instructions. **To plan a sequence of steps to achieve a desired outcome.** **To program Code and Go Mice to a complete algorithm to move the Code and Go Mice to a desired location.** *To create and debug simple programs.* **To program a Code and Go Mice using a sequence of instructions.** **To create, run and debug a simple program using a screen Bot.** *Use logical reasoning to predict the behaviour of simple programs.* **To explain what a particular program will do.** *Recognise common uses of information technology beyond school.*	*Use technology purposefully to create, organise, store, manipulate and retrieve digital content.* **To use technology effectively and confidently** **To Log on to online platforms with support where needed (Numbots, Hour of Code)** **To combine text and images through digital storytelling (Scratch Jr).** **To create a simple animation using Scratch Jr.** **To create a pictogram or graph.**	*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.* **To understand that not everyone online is honest.** **To understand the idea of a trusted adult.** **To know how your online activities can affect others.** **To be able to identify the positives and negatives of using technology.** **To recognise kind and unkind comments.** **To know the risks of sharing images without permission.** **To understand the types of images that you should or shouldn't post online.**

Curriculum Skills and Progression Map

	To name different input and output systems of computer systems.		
Assessment objectives **Year 2** **Computer Science** **Digital LIteracy** **Information Technology**	**Computer Science**	**Information Technology**	**Digital Literacy**
	More advanced sequencing - Code and Go Mice To predict the outcomes of a command To match a command to an outcome To follow simple instructions To give directions to travel between two given points To predict the outcome of a series of forwards and backwards movements To experiment with turn and move commands to make a robot move To predict the outcome of a sequence involving multiple commands To explain what my program should do, and debug any errors To understand and identify multiple solutions to a problem **Introduction to Scratch Jr - making sprites move** To use ScratchJr blocks to make a character move To match a character's actions to a block of code To sequence a popular story To explain that a story requires three parts To tell a section of a story using animation in ScratchJr To use the Control block 'Repeat' in ScratchJr To explain how to use the Control blocks 'Wait' and 'Set Speed' To program characters to repeat their action To explain the purpose of the Motion block 'Go Home'	**Technology around us** To identify examples of computers and digital technology To describe different uses of computers To identify that a computer is a part of information technology To identify examples of computers at home and in school To talk about how technology can be used in different ways To compare types of technology To recognise how to use technology responsibly To explain simple guidance on how to use technology responsibly **Pictograms** To record data in a tally chart To represent a tally count as a total To compare totals in a tally chart To enter data onto a device To use a computer to view data in different formats To use pictograms to answer simple questions about objects To organise data in a tally chart To answer 'more than' 'less than' and 'most/least' questions about data collected **Using the Internet** To search using the term 'for kids' To access a web link effectively To use the camera to access a website using QR codes Understand how to post comments to a group page safely and responsibly "To identify search results that will give some	**E-safety books and objectives:** **Autumn 1 - PenguinPig** *Online relationships* *Managing online information* **Autumn 2 - #Goldilocks** *Health, wellbeing and lifestyle* *Online reputation* **Spring 1 - Troll stinks!** *Online Bullying* *Health, wellbeing and lifestyle* *Self-image and identity* *Online Reputation* **Spring 2 - Chicken Clickin** *Online relationships* *Health, wellbeing and lifestyle* *Privacy and security* *Managing online information* **Summer 1 - Monkeycow** *Privacy and Security* *Health, wellbeing and lifestyle* **Summer 2 - Once upon a time online** *Health, wellbeing and lifestyle* *Self-image and identity* *Privacy and security*

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Curriculum Skills and Progression Map

	Going further with Scratch Jr - Digital story telling **Going further with Scratch Jr - Digital story-telling** To explain the purpose of a speech bubble To use the Looks block 'Say' To develop the program to include timing using Control blocks To extend my programming skills to include the use of the Triggering blocks 'Send Message' and 'Start on Message' To explain what physical interaction is To use the Triggering block 'Start on Bump' to create physical interaction between characters To extend my programming skills to include user interaction using the Triggering block 'Start on Tap' To select suitable characters, backgrounds, blocks, and programming scripts in ScratchJr	useful information" To know where to find the address of a link	
Vocabulary **Year 2**	Information technology; object; properties (attribute); technology; algorithm; attribute (property); code; code snippet; command; computer; data; debugging; information; program; run (execute) [Click to access vocabulary glossary](#)		
	Computer Science	**Information Technology**	**Digital Literacy**
Teaching Opportunities **Year 2** **Computer Science** **Digital LIteracy** **Information Technology**	Stand alone computing lessons: **More advanced sequencing with robots using Code and go Mouse** - **Autumn 1** **Hour of Code** - **Autumn 2** (December) **Introduction to Scratch Jr - make sprites move** - **Summer 1**	Stand alone computing lessons: **Technology around us** - **Autumn 2** **Pictograms** - **Spring 1** **Digital photography.** Take photos using iPads. Retrieve images and edit/manipulate - **Summer 2**	Stand alone computing lessons: E-safety sessions. - 2 per term. 1 completed in assembly and 1 in computing lessons every term. E Safety Books covered: **Autumn 1** **PenguinPig by Stuart Spendlow -** *Catfishing and not believing everything*

	Going further with Scratch Jr - Digital story-telling - **Summer 2**		*online* **Autumn 2** **#Goldilocks by Jeanne Willis -** *Over-sharing on social media and online Privacy* **Spring 1** **Troll Stinks! by Jeanne Willis -** *Cyber Bullying* **Spring 2** **KS1 and LKS2 - Chicken** **Clickin' (in-app purchases and cat** **fishing)** **Summer 1** **MonkeyCow by Stuart Spendlow** *Sharing passwords* **Summer 2** **Once upon a time online by David** **Bedford** *in-app purchases, cat fishing,* *reporting comments* **Safer internet day** - **Spring 1** **Using the Internet** - **Spring 2**
Teaching Opportunities **Year 2**	**Further teaching opportunities:** PE / maths - position and direction. Mathematical language used to direct a 'human robot' through a series of steps to achieve a goal. **More advanced sequencing with robots using Code and go Mouse** - **Autumn 1** English - **Going further with Scratch Jr - Digital story-telling** - **Summer 2**	**Further teaching opportunities:** Maths - **Pictograms** - **Spring 1** **Digital photography.** Take photos using iPads. Retrieve images and edit/manipulate - **Summer 2** - Science - environment seasonal change - add text to annotate - DT - take photo and add text to annotate	**Further teaching opportunities:** - RHE

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		Progressive document - each child. Use Word / slides (or similar) to create a digital piece of work - type a sentence or short piece of writing. Completed each term using work from any other subject - teacher selection	

Curriculum Skills and Progression Map

Programmes of study Year 3	Pupils should be taught: ● **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** ● **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.** ● **use search technologies** effectively, **appreciate how results are selected** and ranked, and be discerning in evaluating digital content ● **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.** ● **use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.**		
Progression objectives Year 3	**Computer Science**	**Information Technology**	**Digital Literacy**
	To design, write and debug programs that accomplish specific goals. **To design a program using block language.** **To program a simple animation making a sprite move and talk.** **To understand that sometimes a program will have to be debugged.** *Use sequence, selection and repetition in programs; work with variables and various forms of input and output.* **To recognise common forms of input (keyboard/trackpad/mouse/touch screen) and output (screen/ speakers).** **To create a program that produces an output on the screen.**	*Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.* **To understand that search engines select pages according to keywords.** **To search for information within a single site.** *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.*	*Use technology safely, respectfully and responsibly; recognise acceptable/ unacceptable behaviour; identify a range of ways to report concern about content and contact.* **To begin to develop an understanding of acceptable online behaviour** **To know how to report a concern to a trusted adult.** **To understand that emails and attachments can contain computer viruses.**

	To use sequence in programs in an appropriate order (e.g. to program a sprite). *Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.* **To predict and explain what a program will do based on the code.** **To identify errors in the program code.** *To use controlling or simulating physical systems; solve problems by decomposing them into smaller parts.* **To understand what a computer simulation is.** **To explore a variety of computer simulations and explain why they can be useful.** *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.* **To understand how a computer stores data.** **To understand what a computer network is.** **To identify uses of technology beyond school and why they are helpful (e.g. robots & simulations)**	**To use a computer to create a musical pattern using three notes** **To edit and refine my work, evaluating how you have made improvements** **To create a simple animation with picture and audio**	

Curriculum Skills and Progression Map

	Computer Science	Information Technology	Digital Literacy
Assessment objectives **Year 3**	**Understanding networks and connecting computers - Spring 1** To explain that digital devices accept inputs To explain that digital devices produce outputs To follow a process To classify input and output devices To design a digital device To explain how digital devices are used in different ways To recognise similarities and differences between digital and non-digital tools To recognise different connections To explain how messages are passed through multiple connections To recognise that computer networks are made up of a number of devices **Lego WeDo and Code.org - Spring 2** To understand that the Lego Hub can connect to the iPad app To create a flowchart to plan out my work To programme the lego hub to change colour To understand, use and explain the role of the motor output To understand, use and explain the role of the tilt input To understand, use and explain the role of the light/proximity sensor To understand and experiment with the looping button	**Introduction to Google Workspace** To log in to your norwoodmail account independently To access Google Classroom, and use the platform sensibly and with respect to others To access Google Drive To create a Google Document, shared in google drive To create a google slides file To add text, shape and pictures to a google slide To submit work on Google Classroom To share a piece of work with a partner, who can then add more detail to the file **Sequencing Sounds** To identify simple differences in pieces of music To listen with concentration to a range of music (links to the Music curriculum) To create a rhythm pattern To explain that music is created and played by humans To connect images with sounds To use a computer to experiment with pitch and duration To relate an idea to a piece of music To use a computer to create a musical pattern using three notes To edit and refine my work, evaluating how you have made improvements **Animation** To draw a sequence of linked pictures To predict what an animation will look like To explain why little changes are needed for each frame	**E-safety books and objectives:** **Autumn 1 - PenguinPig** *Online relationships* *Managing online information* **Autumn 2 - #Goldilocks** *Health, wellbeing and lifestyle* *Online reputation* **Spring 1 - Troll stinks!** *Online Bullying* *Health, wellbeing and lifestyle* *Self-image and identity* *Online Reputation* **Spring 2 - Chicken Clickin** *Online relationships* *Health, wellbeing and lifestyle* *Privacy and security* *Managing online information* **Summer 1 - Monkeycow** *Privacy and Security* *Health, wellbeing and lifestyle* **Summer 2 - Once upon a time online** *Health, wellbeing and lifestyle* *Self-image and identity* *Privacy and security*

	Basics with Sphero (programming robots) To understand how the Sphero and iPad communicate with each other To control the Sphero using a separate device To achieve a simple goal by controlling the Sphero (game cards) To write programs for the Sphero using movement and repetition To write a program to trace a maze/route with Sphero and De-bug To write a program with outputs To write a program with random variables	To create an effective stop-frame animation To create a storyboard, breaking down setting, character and events To use onion skinning to help make small changes between frames To evaluate the quality of their animation To evaluate other people's animations, and suggest points to improve	
Vocabulary Year 3	algorithm; attribute (property); code; code snippet; command; computer; data; debugging; information; program; run (execute); computer network; computer system; condition; condition-controlled loop; data set; decompose; digital device; domain name; execute (run); hardware; HTML (Hyper Text Markup Language); Hyperlink; Infinite loop; input; input device; internet; loop; loop (condition-controlled); loop (count-controlled); loop (infinite); network; object; output; output device; procedure; process; repetition; router; selection; server; software; stored (data); subroutine; switch (network switch); URL (Uniform Resource Locator); variable; web; web address; web browser; web page; website; wifi; WAP (Wireless Access Point); WWW (World WIde Web) Click to access vocabulary glossary		

	Computer Science	**Information Technology**	**Digital Literacy**
Teaching Opportunities Year 3 **Computer Science** **Digital LIteracy**	Stand alone computing lessons: **Hour of Code** - **Autumn 2** (December) **Understanding networks and connecting computers** - **Spring 1** **Lego WeDo and Code.org** - **Spring 2**	Stand alone computing lessons: **Introduction to Google Workspace -** **Autumn 1** **Sequencing sounds** - **Autumn 2** **Animation** - **Summer 1**	Stand alone computing lessons: E-safety sessions. - 2 per term. 1 completed in assembly and 1 in computing lessons every term. E Safety Books covered: **Autumn 1**

Curriculum Skills and Progression Map

Information Technology	Basics with Sphero (programming robots) - Summer 2		PenguinPig by Stuart Spendlow - *Catfishing and not believing everything online*
			Autumn 2
			#Goldilocks by Jeanne Willis - *Over-sharing on social media and online Privacy*
			Spring 1
			Troll Stinks! by Jeanne Willis - *Cyber Bullying*
			Spring 2
			KS1 and LKS2 - Chicken Clickin' (in-app purchases and cat fishing)
			Summer 1
			MonkeyCow by Stuart Spendlow *Sharing passwords*
			Summer 2
			Once upon a time online by David Bedford *in-app purchases, cat fishing, reporting comments*
			Safer internet day (Feb)- **Spring 1**
Teaching Opportunities **Year 3**	**Further teaching opportunities:**	**Further teaching opportunities:** **All subjects -** use google docs, slides etc to present and create digital pieces **Introduction to Google Workspace -** **Autumn 1**	**Further teaching opportunities:** RHE

Curriculum Skills and Progression Map

Programmes of study Year 4	**Pupils should be taught:** - 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 - 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 - use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content - 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 - use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.		
	Computer Science	**Information Technology**	**Digital Literacy**
Progression objectives Year 4	*To design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.* **To design a program using block language in which the user has to provide some input** **To be able to debug their code thoroughly.** *Use sequence, selection and repetition in programs; work with variables and various forms of input and output.* **To use a sequence of commands in a computer program.** **To write code that includes keyboard input and produces an onscreen output.**	*Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.* **To use a search engine to find information.** **To understand search engines rank pages according to relevance.** *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.* **To search a branching database.** **To add records to a branching database.**	*Use technology safely, respectfully and responsibly; recognise acceptable/ unacceptable behaviour; identify a range of ways to report concern about content and contact.* **To recognise the key values that are important in positive online relationships.** **To identify the feelings and emotions that arise from online bullying.** **To develop strategies to use if we or someone we know is being bullied online.** **To know how to stay safe when using the internet.** **To understand the reason for age ratings.**

	Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs. **To explain what the algorithm will do.** **To identify and debug errors in code.** *To use controlling or simulating physical systems; solve problems by decomposing them into smaller parts.* **To develop a simple computer simulation** *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.* **To learn how the Internet works, including how it is structured and how data travels along it.**	**To create a branching database both online and on paper.** **To present information in a range of ways.** **To use technology to manipulate images**	**To identify how and who to ask for help.** **To consider what is appropriate language and behaviour when online.**
Assessment objectives Year 4	**Computer Science** **Hour of Code (December) - Autumn 2** **Advanced Coding with Sphero - Spring 1** To understand how the Sphero and iPad communicate with each other To control the Sphero using a separate device	**Information Technology** **Photo Editing - Autumn 1** To identify changes that we can make to an image To explore how images can be changed in real life To explain the effect that editing can have on an image To change the composition of an image by selecting parts of it	**Digital Literacy** **E-safety books and objectives:** **Autumn 1 - PenguinPig** *Online relationships* *Managing online information* **Autumn 2 - #Goldilocks** *Health, wellbeing and lifestyle* *Online reputation*

To achieve a simple goal by controlling the Sphero (game cards)

To write programs for the Sphero using movement and repetition

To write a program to trace a maze/route with Sphero and De-bug

To write a program with outputs

To write a program with random variables

Understanding inputs with Micro:Bit - Summer 2

To identify the output in an electrical circuit

To understand the term selection, and use it to describe an electrical output

To understand and use decision boxes

To create flowchart algorithms

To understand what inputs are and find inputs on the BBC Micro:bit

To plan, test and debug programs

To write programs that include inputs and outputs

To consider why someone might want to change the composition of an image

To talk about changes made to images

To choose effects to make my image fit a scenario

To identify how an image has been retouched

To sort images into 'fake' or 'real' and explain my choices

To compare and evaluate the original image with my completed publication

Computing Systems and the Internet - Autumn 2

To describe the internet as a network of networks

To demonstrate how information is shared across the internet

To discuss why a network needs protecting

To explain that the internet is used to provide many services

To recognise that the World Wide Web contains websites and web pages

To explain the types of media that can be shared on the WWW

To explain that internet services can be used to create content online

To suggest who owns the content on websites

To explain why some information I find online may not be honest, accurate, or legal

To explain why I need to think carefully before I share or reshare content

Data Logging - Spring 2

To suggest questions that can be answered using a given data set

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Spring 1 - Troll stinks!
Online Bullying
Health, wellbeing and lifestyle
Self-image and identity
Online Reputation

Spring 2 - Chicken Clickin
Online relationships
Health, wellbeing and lifestyle
Privacy and security
Managing online information

Summer 1 - Monkeycow
Privacy and Security
Health, wellbeing and lifestyle

Summer 2 - Once upon a time online
Health, wellbeing and lifestyle
Self-image and identity
Privacy and security

| | | To identify the data that we need to answer questions
To identify that sensors are input devices
To use a digital device to collect data automatically
To recognise that a sensor can be used as an input device for data collection
To choose how often to automatically collect data samples
To explain that a data logger captures 'data points' from sensors over time
To use a computer program to sort data by one attribute
To export information in different formats
To present data in a graph or table

Branching Databases - **Summer 1**
To investigate questions with yes/no answers
To make up a yes/no question about a collection of objects
To create two groups of objects separated by one attribute
To select an attribute to separate objects into groups
To arrange objects into a tree structure
To select objects to arrange in a branching database
To prove my branching database works
To explain that questions need to be ordered carefully to split objects into similarly sized groups
To use my branching database to answer questions | |
| **Vocabulary**
Year 4 | algorithm; attribute (property); code; code snippet; command; computer; data; debugging; information; program; run (execute); computer | |

Curriculum Skills and Progression Map

	network; computer system; condition; condition-controlled loop; data set; decompose; digital device; domain name; execute (run); hardware; HTML (Hyper Text Markup Language); Hyperlink; Infinite loop; input; input device; internet; loop; loop (condition-controlled); loop (count-controlled); loop (infinite); network; object; output; output device; procedure; process; repetition; router; selection; server; software; stored (data); subroutine; switch (network switch); URL (Uniform Resource Locator); variable; web; web address; web browser; web page; website; wifi; WAP (Wireless Access Point); WWW (World WIde Web) Click to access vocabulary glossary

	Computer Science	**Information Technology**	**Digital Literacy**

Teaching Opportunities
 	
Year 4
 	
Computer Science
 	
Digital LIteracy
 	
Information Technology
	Stand alone computing lessons:
	
	Hour of Code (December) - **Autumn 2**
	
	Advanced Coding with Sphero - **Spring 1**
	
	Understanding inputs with Micro:Bit - **Summer 2**
		Stand alone computing lessons:
		
		Photo Editing - **Autumn 1**
		
		Computing Systems and the Internet - **Autumn 2**
		
		Data Logging - **Spring 2**
		
		Branching Databases - **Summer 1**
			Stand alone computing lessons:
			E-safety sessions.
			  - 2 per term. 1 completed in assembly and 1 in computing lessons every term.
			E Safety Books covered:
			Autumn 1
			PenguinPig by Stuart Spendlow - *Catfishing and not believing everything online*
			Autumn 2
			 #Goldilocks by Jeanne Willis - *Over-sharing on social media and online Privacy*
			Spring 1
			Troll Stinks! by Jeanne Willis - *Cyber Bullying*
			Spring 2
			  KS1 and LKS2 - Chicken Clickin' (in-app purchases and cat fishing)
			Summer 1
			  MonkeyCow by Stuart Spendlow *Sharing passwords*

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			Summer 2 *Once upon a time online by David Bedford* *in-app purchases, cat fishing, reporting comments* Safer internet day (Feb)- **Spring 1**
	Further Teaching Opportunities:	**Further Teaching Opportunities:** Science Data Logging - **Spring 2** Art - Photo Editing - **Autumn 1**	**Further Teaching Opportunities:** **RHE**

Curriculum Skills and Progression Map

Programmes of study Year 5	**Pupils should be taught:** ● 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 ● 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 ● use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content ● 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 ● use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.		
	Computer Science	**Information Technology**	**Digital Literacy**
Progression objectives Year 5	*To design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.* **To design, write and debug a program, using block language, to achieve a desired outcome (introduction to Scratch)** *Use sequence, selection and repetition in programs; work with variables and various forms of input and output.* **To use sequence, selection and repetition in a computer program - hour of code** **To write a program that has a keyboard and mouse input and a screen and speakers output.**	*Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.* **To use filters to make search engines more effective for a given purpose (flatfile database)** **To make informed decisions based on the results given from a search engine.** *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.* **To use, select and combine software to create digital content**	*Use technology safely, respectfully and responsibly; recognise acceptable/ unacceptable behaviour; identify a range of ways to report concern about content and contact.* **To develop an understanding of a 'digital footprint'** **To know how to keep social media settings private.** **To identify rules for sharing images online.** **To describe the positive and negative consequences of sharing images online.** **To recognise the possible influences and pressures to share images online.**

	Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs. **To identify errors in code.** **To debug examples and own code.** *To use controlling or simulating physical systems; solve problems by decomposing them into smaller parts.* **To use decomposition to discover how a game/shape was made in order to design and create their own.** *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.* **To work collaboratively using technology for a given purpose** **To develop an understanding of how information is stored, grouped and accessed online (flatfile databases)**	**To design and create simple animations using Scratch.** **To create a spreadsheet and analyse and evaluate the information.** **To use technology to survey and gather information effectively** **To choose software to share information with others.** **To think critically about how their information is presented, taking into account audience and purpose.**	
Assessment objectives **Year 5**	**Computer Science** **Going further with Lego WeDo (using repetition)** - **Autumn 2** To understand that the Lego Hub can connect to the iPad app To create a flowchart to plan out my work To programme the lego hub to change colour	**Information Technology** **Flat File Database** - **Autumn 1** To create multiple questions about the same field To explain how information can be recorded To order, sort, and group my data cards To navigate a flat-file database to compare To choose which field to sort data by to answer a given question	**Digital Literacy** **E-safety books and objectives:** **Autumn 1 - PenguinPig** *Online relationships* *Managing online information* **Autumn 2 - #Goldilocks** *Health, wellbeing and lifestyle* *Online reputation*

	To understand, use and explain the role of the motor output To understand, use and explain the role of the tilt input To understand, use and explain the role of the light/proximity sensor To understand and experiment with the looping button **Hour of Code (December)** - **Autumn 2** **Introduction to Scratch** - **Summer 1** To understand that instructions can include repetition To predict the outcome of a given code To modify codes to create a given outcome To understand the difference between infinite loops and count-controlled loops To recognise the importance and value of loops when coding and programming To run multiple loops at the same time, to create a desired outcome To copy and adapt lines of code to other sprites, improving functionality and effectiveness I understand the use of time delays and why they should be used I can create code to alter the background of my scratch file, using loops and delays	To explain how information can be grouped To group information to answer questions To outline how 'AND' and 'OR' can be used to refine data selection To ask questions that will need more than one field to answer To refine a search in a real-world context and present my findings **Introduction to spreadsheets** - **Spring 1** To identify questions that can be answered using data To propose simple, relevant questions that can be answered using data To explain that objects/artifacts can be described using data To explain that computers deal with different data types in different ways To explain that formulas can be used to produce calculated data To recognise that data can be calculated using different operations To recognise that changing inputs also changes outputs To apply formulas to data, including duplication To evaluate results in comparison to the question asked **Creating Google Forms and interpreting data** - **Spring 2** To create and conduct a survey using multiple choice questions (non-digital) To suggest how technology could improve the ability to gather results for a survey To explore the types of questions Google Forms allows	**Spring 1 - Troll stinks!** *Online Bullying* *Health, wellbeing and lifestyle* *Self-image and identity* *Online Reputation* **Spring 2 - Technology Tail** *Online relationships* *Managing online information* *Self-image and identity* *Online reputation* **Summer 1 - Monkeycow** *Privacy and Security* *Health, wellbeing and lifestyle* **Summer 2 - Once upon a time online** *Health, wellbeing and lifestyle* *Self-image and identity* *Privacy and security*

		To create a simple survey on Google Forms To explore how a Google form can be shared with others To complete other children's Google Form files, evaluate suitability and feedback improvements To use a Google form as a quiz, selecting correct answers to provide instant feedback To interpret results from a Google form, and make conclusions based on these results **Video Editing - Summer 2** To identify different types of recording devices, suggesting advantages and disadvantages of each To compare features in different videos To identify and find features for video recording on an iPad To experiment with different camera angles To suggest filming techniques for a given purpose To create a storyboard to outline the scenes of a video To import chosen footage into iMovie To edit my video to improve the final outcome To review and evaluate the effectiveness of my video	
Vocabulary **Year 5**	algorithm; attribute (property); code; code snippet; command; computer; data; debugging; information; program; run (execute); computer network; computer system; condition; condition-controlled loop; data set; decompose; digital device; domain name; execute (run); hardware; HTML (Hyper Text Markup Language); Hyperlink; Infinite loop; input; input device; internet; loop; loop (condition-controlled); loop (count-controlled); loop (infinite); network; object; output; output device; procedure; process; repetition; router; selection; server; software; stored (data); subroutine; switch (network switch); URL (Uniform Resource Locator); variable; web; web address; web browser; web page;		

	website; wifi; WAP (Wireless Access Point); WWW (World WIde Web) Click to access vocabulary glossary

Teaching Opportunities **Year 5** **Computer Science** **Digital LIteracy** **Information Technology**	**Computer Science**	**Information Technology**	**Digital Literacy**
	Stand alone computing lessons: **Going further with Lego WeDo (using repetition)** - **Autumn 2** **Hour of Code (December)** - **Autumn 2** **Introduction to Scratch** - **Summer 1**	Stand alone computing lessons: **Flat File Database** - **Autumn 1** **Introduction to spreadsheets** - **Spring 1** **Creating Google Forms and interpreting data** - **Spring 2** **Video Editing** - **Summer 2**	Stand alone computing lessons: E-safety sessions. - 2 per term. 1 completed in assembly and 1 in computing lesson every term. E Safety Books covered: **Autumn 1** **PenguinPig by Stuart Spendlow - Catfishing and not believing everything online** **Autumn 2** **#Goldilocks by Jeanne Willis - Over-sharing on social media and online Privacy** **Spring 1** **Troll Stinks! by Jeanne Willis - Cyber Bullying** **Spring 2** **UKS2 - Technology Tail (digital footprint)** **Summer 1** **MonkeyCow by Stuart Spendlow Sharing passwords** **Summer 2** **Once upon a time online by David Bedford in-app purchases, cat fishing, reporting comments**

			Safer internet day - Spring 1
	Further Teaching Opportunities:	**Further Teaching Opportunities:** **Science:** **Introduction to spreadsheets** - Spring 1 **Maths:** **Creating Google Forms and interpreting data** - Spring 2 **English:** **Publish work; collaborate to create presentation**	**Further Teaching Opportunities:**

Curriculum Skills and Progression Map

Programmes of study Year 6	**Pupils should be taught:** ● 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 ● 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 ● use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content ● 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 ● use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.		
	Computer Science	**Information Technology**	**Digital Literacy**
Progression objectives Year 6	*To design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.* **To design, write and debug a program based on their own ideas for a target audience.** *Use sequence, selection and repetition in programs; work with variables and various forms of input and output.* **To use sequence, selection, repetition and variables in a computer program.** **To write a program that accepts a number of different inputs and produces a number of different outputs.**	**Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.** **To know there are a range of search engines. (Google, Bing, Yahoo etc.)** **To understand there are also site specific search engines. (App store, Google play etc.)** *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.* **To use a range of media to create a pitch presentation.**	*Use technology safely, respectfully and responsibly; recognise acceptable/ Unacceptable behaviour; identify a range of ways to report concern about content and contact.* **To explain what is meant by a 'digital footprint'** **To list key applications that we may use now and in the future.** **To know why there are age ratings/restrictions for social media, apps and games.** **To identify ways to keep yourself and others safe online and offline.** **To recognise that people may not always be who they say they are online.** **To have an understanding of what constitutes a 'good digital citizen'**

	Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs. **To give clear and precise logical explanations of code.** **To detect and correct errors in code.** *To use controlling or simulating physical systems; solve problems by decomposing them into smaller parts.* **To use decomposition to discover how a game/app was made in order to design and create their own.** *To use decomposition to discover how a game/app was made in order to design and create their own. 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.*	**To create an advertising campaign for their app or game.** **To conduct market research and analyse data collected.** **To design and create a model using Tinkercad**	**To develop understanding of copyright.**
	Computer Science	**Information Technology**	**Digital Literacy**
Assessment objectives **Year 6** **Computer Science** **Digital LIteracy** **Information Technology**	**Advanced programming with Micro:bit** - **Autumn 2** To identify the inputs and outputs of a BBC micro:bit To know how sequence is used in computer programs To create a simple digital animation using code	**Internet communication** - **Autumn 1** To identify how to use a search engine To understand that there are different search engines available, and identify similarities and differences between major search engines To describe how search engines select results	**E-safety books and objectives:** **Autumn 1 - PenguinPig** *Online relationships* *Managing online information* **Autumn 2 - #Goldilocks** *Health, wellbeing and lifestyle*

	To understand the role of the 'IF - THEN - ELSE' operations To recognise and use events such as 'on start' 'on shake' and 'on screen down' To program a 'digital pet' using events and functions **Going further with Scratch game design - Summer 1** To understand the terms 'sprite' 'algorithm' 'event' and 'function' To programme a simple sprite to change shape or colour To add backgrounds to a simple scratch file To programme sprites to move using direction keys or the mouse To understand and use the variables function To use the 'pick random' button, showing an understanding of the 4 quadrants of the screen To use the variable button to create either a timer or a score button To develop a game with a working purpose, considering target audience	To recognise the role of a search engine index and crawlers To explain how search results are ranked To recognise why the order of results is important, and to whom To recognise how we communicate using technology To evaluate different methods of online communication **Using Google Sites - creating websites with a purpose - Spring 1** To use Google Sites to develop a website based on a cross-curricular theme. To embed files from google drive to a website To add collaborators to your website, to work cooperatively. To create subpages and menus To understand that information that is published is on the public domain To share website addresses with others, and appraise each other's websites **Tinkercad - 3D modelling - Spring 2** To place shapes onto the workplane To move shapes within the workplane To adjust the size of shapes To create a pitched roof and curved entrance To create a realistic model of my house To add details such as windows and doors To use the curved function to add further, more challenging details such as a curved window or a door handle **Game Design - promote your product - Summer 2** To understand the terms 'sprite' 'algorithm' 'event' and 'function'	*Online reputation* **Spring 1 - Troll stinks!** *Online Bullying* *Health, wellbeing and lifestyle* *Self-image and identity* *Online Reputation* **Spring 2 - Technology Tail** *Online relationships* *Managing online information* *Self-image and identity* *Online reputation* **Summer 1 - Monkeycow** *Privacy and Security* *Health, wellbeing and lifestyle* **Summer 2 - Once upon a time online** *Health, wellbeing and lifestyle* *Self-image and identity* *Privacy and security*

		To programme a simple sprite to change shape or colour To add backgrounds to a simple scratch file To programme sprites to move using direction keys or the mouse To understand and use the variables function To use the 'pick random' button, showing an understanding of the 4 quadrants of the screen To use the variable button to create either a timer or a score button To develop a game with a working purpose, considering target audience	
Vocabulary **Year 6**	algorithm; attribute (property); code; code snippet; command; computer; data; debugging; information; program; run (execute); computer network; computer system; condition; condition-controlled loop; data set; decompose; digital device; domain name; execute (run); hardware; HTML (Hyper Text Markup Language); Hyperlink; Infinite loop; input; input device; internet; loop; loop (condition-controlled); loop (count-controlled); loop (infinite); network; object; output; output device; procedure; process; repetition; router; selection; server; software; stored (data); subroutine; switch (network switch); URL (Uniform Resource Locator); variable; web; web address; web browser; web page; website; wifi; WAP (Wireless Access Point); WWW (World WIde Web) [Click to access vocabulary glossary](#)		
	Computer Science	**Information Technology**	**Digital Literacy**
Teaching Opportunities Year 6 **Computer Science** **Digital LIteracy**	**Stand alone computing lessons:** **Advanced programming with Micro:bit** - **Autumn 2** **Hour of Code** - **Autumn 2**	**Stand alone computing lessons:** **Internet communication** - **Autumn 1** **Using Google Sites - creating websites with a purpose** - **Spring 1**	**Stand alone computing lessons:** E-safety sessions. - 2 per term. 1 completed in assembly and 1 in computing lessons every term. E Safety Books covered:

| Information Technology | Going further with Scratch game design - Summer 1 | Tinkercad - 3D modelling - Spring 2

Game Design - promote your product - Summer 2 | Autumn 1
PenguinPig by Stuart Spendlow - *Catfishing and not believing everything online*
Autumn 2
 #Goldilocks by Jeanne Willis - *Over-sharing on social media and online Privacy*
Spring 1
Troll Stinks! by Jeanne Willis - *Cyber Bullying*
Spring 2
 UKS2 - Technology Tail (*digital footprint*)
Summer 1
 MonkeyCow by Stuart Spendlow *Sharing passwords*
Summer 2
 Once upon a time online by David Bedford
 in-app purchases, cat fishing, reporting comments

Safer Internet Day - Spring 1 |
| | Further Teaching Opportunities: | Further Teaching Opportunities:
All subjects - Using Google Sites - creating websites with a purpose - Spring 1

Art / DT - Sketch up - 3D modelling - Spring 2 | Further Teaching Opportunities: |