

# Curriculum Skills and Progression Map Computing



## Key Concepts:

How networks and computers work

Programming and debugging on and off screen

Data collection and analysis

Using technology effectively to enhance learning

Understanding how to stay safe online

## Curriculum Skills and Progression Map

<b>Reception</b>			
Progression Objectives	Computer Science	Information Technology	Digital Literacy
Relevant ELG			
KS1 readiness objectives	<ul style="list-style-type: none"> <li>• Awareness of the cause and effect of technology</li> <li>• Awareness of input and outputs of devices</li> </ul>	<ul style="list-style-type: none"> <li>• Awareness of different technologies in and out of school</li> <li>• Awareness of digital storage of information- photography, digital writing and research information</li> <li>• Can use technology to express creatively and constructively</li> </ul>	<ul style="list-style-type: none"> <li>• Awareness of different technologies in and out of school</li> <li>• Awareness of digital storage of information- photography, digital writing and research information</li> <li>• To develop understanding of having a digital presence on-line</li> </ul>
Vocabulary	<ul style="list-style-type: none"> <li>• Sequence, instruction, program, computer</li> </ul>	<ul style="list-style-type: none"> <li>• Computer, printer, screen, tablet, coding critter, Bee-bot</li> </ul>	<ul style="list-style-type: none"> <li>• Internet, on-line, technology</li> </ul>
Topics taught	<ul style="list-style-type: none"> <li>• Drawing app on Cleverboard</li> <li>• Using tablets to take photographs</li> <li>• Sharing Class Dojo homework – talk about upload, download etc.</li> <li>• Teacher to narrate when opening programs, using internet etc. on the screen</li> <li>• Movable images on Lynx slides – 1 finger to move, 2 to change size etc.</li> <li>• Hour of Code (December): Beaver Achiever or similar – simple block coding. Teacher guided activity on Cleverboard screen.</li> <li>• Beebots – positional language</li> <li>• Coding Critters – journey stories</li> </ul>	<ul style="list-style-type: none"> <li>• Phonics and Maths games on tablet/Cleverboard screens</li> <li>• Drawing app on Cleverboard</li> <li>• Use screens, computers, tablets, bee-bots and coding critters.</li> <li>• Phonics and Maths games on tablet/Cleverboard screens</li> <li>• Drawing app on Cleverboard</li> </ul>	<ul style="list-style-type: none"> <li>• To read e-safety whole school stories and discuss what is meant by on-line.</li> <li>• Develop understanding of what information can be shared safely – link to stranger danger</li> </ul>

## Curriculum Skills and Progression Map

<p><b>Programmes of study</b></p> <p><b>Year 1</b></p>	<p><b>Pupils should be taught:</b></p> <ul style="list-style-type: none"> <li>• understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions</li> <li>• create and debug simple programs</li> <li>• use logical reasoning to predict the behaviour of simple programs</li> <li>• use technology purposefully to create, organise, store, manipulate and retrieve digital content</li> <li>• recognise common uses of information technology beyond school</li> <li>• 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.</li> </ul>		
	<p><b>Computer Science</b></p>	<p><b>Information Technology</b></p>	<p><b>Digital Literacy</b></p>
<p><b>Progression objectives</b></p>	<p><i>To understand what algorithms are; how they are implemented on digital devices; and that programs execute by following precise and unambiguous instructions.</i></p> <p><b>To understand algorithms as a sequence of instructions in everyday context (e.g. recipe).</b></p> <p><b>To plan a sequence of steps to achieve a desired outcome (e.g. to make a sandwich/move a Bee Bot).</b></p> <p><b>To program a Bee Bot with single instructions.</b></p> <p><i>To create and debug simple programs</i></p> <p><b>To create a program for a Bee Bot by entering instructions one at a time.</b></p> <p><i>Use logical reasoning to predict the behaviour of simple programs.</i></p> <p><b>To predict what a program will do.</b></p>	<p><i>Use technology purposefully to create, organise, store, manipulate and retrieve digital content.</i></p> <p><b>To use computers, I-pads and cameras.</b></p> <p><b>To be able to log in, open and save work.</b></p> <p><b>To create a picture.</b></p> <p><b>To type their own text.</b></p>	<p><i>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.</i></p> <p><b>To know that you need to keep yourself safe on-line.</b></p> <p><b>To close the lid &amp; tell an adult if they see something they shouldn't or feel unsafe.</b></p> <p><b>To know what personal information is and that it should be kept private.</b></p> <p><b>To not copy or share someone else's work without asking.</b></p>

Curriculum Skills and Progression Map

	<p><i>Recognise common uses of information technology beyond school.</i></p> <p><b>To understand what a computer is and how it works.</b></p>		
<p><b>Assessment objectives</b></p>	<p><b>Computer Science</b></p> <p>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</p> <p>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</p>	<p><b>Information Technology</b></p> <p>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</p> <p>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</p>	<p><b>Digital Literacy</b></p> <p>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          I 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</p> <p>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</p>

## Curriculum Skills and Progression Map

<b>Vocabulary</b>	<p><b>Online Safety and Exploring:</b> Purple Mash Log in, username, password, log out, my work, avatar, notification, topics, tools, save</p> <p><b>Grouping and sorting:</b> Sort, criteria Pictograms Pictogram, data, collate</p> <p><b>Lego Builders Instruction,</b> algorithm, computer, program, debug</p> <p><b>Maze Explorers Direction,</b> challenge, arrow, undo, rewind, forward, backwards, right turn, left turn, debug, instruction, algorithm</p> <p><b>Animated Story Books Animation,</b> e-book, font, file, sound effect, display board, Coding, Action, background, button, character, code block, code design, coder, coding, collision detection, command, design mode, input, scale, program, properties, when clicked, stop command, sound, when key</p> <p><b>Spreadsheets Arrow</b> keys, backspace, cursor, columns, cells, clipart, count tool, delete key, image toolbox, lock tool, move cell tool, rows, speak tool, spreadsheet</p> <p><b>Technology Outside of School</b> Technology</p>		
<b>Topics taught</b>	<p>Introduction to coding on-screen Sequencing with robots – code and go mouse</p> <p>Hour of Code (December)</p>	<p>Tech in our lives Grouping Data</p>	<p>Digital painting Digital photography</p> <p>Safer Internet Day E-safety books</p>

## Curriculum Skills and Progression Map

<p><b>Programmes of study</b></p> <p><b>Year 2</b></p>	<p><b>Pupils should be taught:</b></p> <ul style="list-style-type: none"> <li>• understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions</li> <li>• create and debug simple programs</li> <li>• use logical reasoning to predict the behaviour of simple programs</li> <li>• use technology purposefully to create, organise, store, manipulate and retrieve digital content</li> <li>• recognise common uses of information technology beyond school</li> <li>• 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.</li> </ul>		
<p><b>Progression objectives</b></p>	<p><b>Computer Science</b></p> <p><i>To understand what algorithms are; how they are implemented on digital devices; and that programs execute by following precise and unambiguous instructions.</i></p> <p><b>To plan a sequence of steps to achieve a desired outcome.</b></p> <p><b>To program a Bee Bot using a complete algorithm to move the Bee Bot to a desired location.</b></p> <p><i>To create and debug simple programs.</i></p> <p><b>To program a Bee Bot using a sequence of instructions.</b></p> <p><b>To create, run and debug a simple program using a screen Bot.</b></p> <p><i>Use logical reasoning to predict the behaviour of simple programs.</i></p> <p><b>To explain what a particular program will do.</b></p>	<p><b>Information Technology</b></p> <p><i>Use technology purposefully to create, organise, store, manipulate and retrieve digital content.</i></p> <p><b>To use computers, I-pads, audio recorders and cameras.</b></p> <p><b>To be able to log in, open, edit, print and save work.</b></p> <p><b>To combine text and images.</b></p> <p><b>To create a simple presentation.</b></p> <p><b>To create a pictogram or graph.</b></p> <p><b>To create an e-book.</b></p>	<p><b>Digital Literacy</b></p> <p><i>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.</i></p> <p><b>To understand that not everyone online is honest.</b></p> <p><b>To understand the idea of a trusted adult.</b></p> <p><b>To know how your online activities can affect others.</b></p> <p><b>To be able to identify the positives and negatives of using technology.</b></p> <p><b>To recognise kind and unkind comments.</b></p> <p><b>To know the risks of sharing images without permission.</b></p>

Curriculum Skills and Progression Map

	<p><i>Recognise common uses of information technology beyond school.</i></p> <p><b>To name different input and output systems of computer systems.</b></p>		<p><b>To understand the types of images that you should or shouldn't post online.</b></p>
<p><b>Assessment objectives</b></p>	<p>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</p> <p>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'</p>	<p>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</p> <p>To explain simple guidance on how to use technology responsibly          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 useful information"          To know where to find the address of a link</p>	<p>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</p> <p>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 Scratch Jr.</p>

## Curriculum Skills and Progression Map

<b>Vocabulary</b>	<p><b>Coding Action</b>, algorithm, bug, character, code block, code design, command, debug, design mode, input, object, properties, repeat, scale, timer, when clicked, when key</p> <p><b>Online Safety</b> Search, display board, internet, sharing, email, attachment, digital footprint</p> <p><b>Spreadsheets</b> Backspace key, copy and paste, columns, cells, count tool, delete key, equals tool, image toolbox, lock tool, move cell tool, rows, speak tool, spreadsheet</p> <p><b>Questioning</b> Pictogram, question, data, collate, binary tree, avatar, database</p> <p><b>Effective Searching</b> Internet, search, search engine</p> <p><b>Creating pictures</b> Impressionism, palette, pointillism, surrealism, share, template</p> <p><b>Making music</b> Bpm, composition, digitally, instrument, music, sound effects, soundtrack, tempo, volume</p> <p><b>Presenting Ideas</b> Concept map, quiz, presentation, node, animated, non-fiction, narrative, audience</p>		
<b>Topics taught</b>	<p><b>Computer Science</b></p> <p>Introduction to Scratch Jr - making sprites move            Going further with Scratch Jr - Digital story-telling</p> <p>Hour of code (December)</p>	<p><b>Information Technology</b></p> <p>Technology around us            Using the internet</p>	<p><b>Digital Literacy</b></p> <p>Going further with Scratch Jr - Digital story-telling            Pictograms</p> <p>Safer Internet Day            E-safety books</p>



## Curriculum Skills and Progression Map

<p><b>Programmes of study</b></p> <p><b>Year 3</b></p>	<p><b>Pupils should be taught:</b></p> <ul style="list-style-type: none"> <li>• design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts</li> <li>• use sequence, selection, and repetition in programs; work with variables and various forms of input and output</li> <li>• use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs</li> <li>• 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</li> <li>• use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content</li> <li>• 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</li> <li>• use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.</li> </ul>		
<p><b>Progression objectives</b></p>	<p><b>Computer Science</b></p> <p><i>To design, write and debug programs that accomplish specific goals.</i></p> <p><b>To design a program using block language.</b></p> <p><b>To program a simple animation making a sprite move and talk.</b></p> <p><b>To understand that sometimes a program will have to be debugged.</b></p> <p><i>Use sequence, selection and repetition in programs; work with variables and various forms of input and output.</i></p> <p><b>To recognise common forms of input (keyboard/ mouse/touch screen) and output (screen/ speakers).</b></p>	<p><b>Information Technology</b></p> <p><i>Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.</i></p> <p><b>To understand that search engines select pages according to keywords.</b></p> <p><b>To search for information within a single site.</b></p> <p><i>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.</i></p>	<p><b>Digital Literacy</b></p> <p><i>Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concern about content and contact.</i></p> <p><b>To know and understand the meaning of SMART rules.</b></p> <p><b>To know how to report a concern to a member of staff.</b></p> <p><b>To understand that emails and attachments can contain computer viruses.</b></p>

Curriculum Skills and Progression Map

	<p><b>To create a program that produces an output on the screen.</b></p> <p><b>To use sequence in programs in an appropriate order (e.g. to program a sprite).</b>  <i>Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.</i></p> <p><b>To predict and explain what a program will do based on the code.</b></p> <p><b>To identify errors in the program code.</b>  <i>To use controlling or simulating physical systems; solve problems by decomposing them into smaller parts.</i></p> <p><b>To understand what a computer simulation is.</b></p> <p><b>To explore a variety of computer simulations and explain why they can be useful.</b>  <i>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.</i></p>	<p><b>To send an email.</b></p> <p><b>To collect data and create a simple spreadsheet and chart using Google Sheets.</b></p> <p><b>To use a green screen to create a video.</b>  <b>To create a poster editing text and pictures.</b></p> <p><b>To use Google Docs to publish a story or poem.</b></p> <p><b>To create a simple animation with picture and audio (e.g. Puppet-Pals)</b></p>	
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Curriculum Skills and Progression Map

	<p><b>To understand how a computer stores data.</b>  <b>To understand what a computer network is.</b></p> <p><b>To identify uses of technology beyond school and why they are helpful (e.g. robots &amp; simulations)</b></p> <p><b>To understand how email works over the internet.</b></p>		
<p><b>Assessment objectives</b></p>	<p><b>Computer Science</b></p> <p>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</p> <p>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</p>	<p><b>Information Technology</b></p> <p>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</p> <p>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</p>	<p><b>Digital Literacy</b></p> <p>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</p> <p>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          To create an effective stop-frame animation</p>

## Curriculum Skills and Progression Map

	<p>To write a program to trace a maze/route with Sphero and De-bug</p> <p>To write a program with outputs</p> <p>To write a program with random variables</p>	<p>To creat a Google Document, shared in google drive</p> <p>To create a google slides file</p> <p>To add text, shape and pictures to a google slide</p> <p>To submit work on Google Classroom</p> <p>To share a piece of work with a partner, who can then add more detail to the file</p>	<p>To create a storyboard, breaking down setting, character and events</p> <p>To use onion skinning to help make small changes between frames</p> <p>To evaluate the quality of their animation</p> <p>To evaluate other people's animations, and suggest points to improve</p>
<b>Vocabulary</b>	<p><b>Coding Action</b>, Action, algorithm, bug, code block, code design, command, debug, design mode, event, if, input, output, object, repeat, timer, properties, computer simulation, selection, variable</p> <p><b>Online Safety</b> Password, internet, blog, concept map, username, website, webpage, spoof, website, PEGI rating</p> <p><b>Spreadsheets</b> Advance mode, copy and paste, columns, cells, delete key, equals tool, spin tool, move cell tool, rows,</p> <p><b>Touch-typing</b> Communication, email, compose, send, attachment, formatting, report to the teacher, password, address book, save to draft</p> <p><b>Branching databases</b> Branching database, data, database, question</p> <p><b>Simulations</b> Simulation</p> <p><b>Graphing</b> Graph, field, data, bar chart, block graph, line graph</p> <p><b>Microsoft Powerpoint</b> Animation, audio, design template, entrance animation, font, media, presentation, presentation program, slide, slideshow, stockimage, text box, text formatting, transition</p>		
<b>Topics taught</b>	<p>Lego WeDo and Code.org Basics with Sphero</p> <p>Hour of code (December)</p>	<p>Understanding networks and connecting computers</p> <p>Introduction to Google Workspace</p>	<p>Sequencing sounds</p> <p>Animation</p> <p>Safer Internet Day</p> <p>E-safety books</p>

## Curriculum Skills and Progression Map

<p><b>Programmes of study</b></p> <p><b>Year 4</b></p>	<p><b>Pupils should be taught:</b></p> <ul style="list-style-type: none"> <li>• design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts</li> <li>• use sequence, selection, and repetition in programs; work with variables and various forms of input and output</li> <li>• use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs</li> <li>• 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</li> <li>• use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content</li> <li>• 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</li> <li>• use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.</li> </ul>		
<p><b>Progression objectives</b></p>	<p><b>Computer Science</b></p> <p><i>To design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.</i></p> <p><b>To design a program using block language in which the user has to provide some input (e.g. maths quiz).</b></p> <p><b>To be able to debug their code thoroughly.</b></p> <p><i>Use sequence, selection and repetition in programs; work with variables and various forms of input and output.</i></p> <p><b>To use a sequence of commands in a computer program.</b></p>	<p><b>Information Technology</b></p> <p><i>Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.</i></p> <p><b>To use a search engine to find information.</b></p> <p><b>To understand search engines rank pages according to relevance.</b></p> <p><i>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.</i></p>	<p><b>Digital Literacy</b></p> <p><i>Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concern about content and contact.</i></p> <p><b>To recognise the key values that are important in positive online relationships.</b></p> <p><b>To identify the feelings and emotions that arise from online bullying.</b></p> <p><b>To develop strategies to use if we or someone we know is being bullied online.</b></p> <p><b>To know how to stay safe when using the internet.</b></p>

Curriculum Skills and Progression Map

	<p><b>To include repetition by using repeat ...until... within a program.</b></p> <p><b>To use selection by using if...then... within a program.</b></p> <p><b>To write code that includes keyboard input and produces an onscreen output.</b></p> <p><i>Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.</i></p> <p><b>To explain what the algorithm will do.</b></p> <p><b>To identify and debug errors in code.</b></p> <p><i>To use controlling or simulating physical systems; solve problems by decomposing them into smaller parts.</i></p> <p><b>To develop a simple computer simulation (e.g. traffic lights).</b></p> <p><i>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.</i></p> <p><b>To learn how the Internet works, including how it is structured and how data travels along it.</b></p>	<p><b>To search a database.</b></p> <p><b>To add records to a database.</b></p> <p><b>To use Google Forms to collect information.</b></p> <p><b>To present information in a range of ways including tables, charts and graphs.</b></p> <p><b>To create a presentation in Google Slides using transitions and inserting audio/video/ hyperlinks.</b></p> <p><b>To create a newspaper article using columns and editing text.</b></p> <p><b>To compose a piece of music.</b></p>	<p><b>To understand the reason for age ratings.</b></p> <p><b>To identify how and who to ask for help.</b></p> <p><b>To consider what is appropriate language and behaviour when online.</b></p>
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Curriculum Skills and Progression Map

Assessment objectives	Computer Science	Information Technology	Digital Literacy
	<p>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</p> <p>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</p>	<p>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</p> <p>To suggest questions that can be answered using a given data set            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</p>	<p>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            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 "</p> <p>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</p>

## Curriculum Skills and Progression Map

		<p>To explain that a data logger captures 'data points' from sensors over time</p> <p>To use a computer program to sort data by one attribute</p> <p>To export information in different formats</p> <p>To present data in a graph or table</p>	<p>To explain that questions need to be ordered carefully to split objects into similarly sized groups</p> <p>To use my branching database to answer questions</p>
<b>Vocabulary</b>	<p><b>Coding</b> Action, alert, algorithm, code design, control, command, debug, debugging, design mode, event, flowchart bug, input, object, repeat, selection, computer simulation, timer, variable</p> <p><b>Online Safety</b> Computer virus, cookies, copyright, digital footprint, email, identity theft, malware, phishing, plagiarism, spam</p> <p><b>Spreadsheets</b> Average, advance mode, columns, cells, charts, equals tool, formula, formula wizard, move cell tool, random tool, rows, spin tool, spreadsheet, timer</p> <p><b>Writing for different audiences</b> Font, bold, italic, underline</p> <p><b>Logo, Logo</b> BK, FD, RT, LT, repeat, SETPC, SETPS, PU, PD</p> <p><b>Animation</b> Animation, background, frame, flipbook, onion skinning, stop motion, play, sound, video clip</p> <p><b>Effective searching</b> Easter egg, internet, internet browser, search, search engine, spoof website, website</p> <p><b>Hardware investigators</b> Motherboard, CPU, RAM, Graphics card, network card, monitor, speakers, keyboard and mouse</p>		
<b>Topics taught</b>	<p>Advanced coding with Sphero</p> <p>Understanding inputs with Micro:bit</p> <p>Hour of code (December)</p>	<p>Computer systems and the internet</p> <p>Data logging</p>	<p>Branching databases</p> <p>Photo editing</p> <p>Safer Internet Day</p> <p>E-safety books</p>



## Curriculum Skills and Progression Map

<p><b>Programmes of study</b></p> <p><b>Year 5</b></p>	<p><b>Pupils should be taught:</b></p> <ul style="list-style-type: none"> <li>• design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts</li> <li>• use sequence, selection, and repetition in programs; work with variables and various forms of input and output</li> <li>• use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs</li> <li>• 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</li> <li>• use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content</li> <li>• 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</li> <li>• use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.</li> </ul>		
<p><b>Progression objectives</b></p>	<p><b>Computer Science</b></p> <p><i>To design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.</i></p> <p><b>To design, write and debug a program, using block language, to achieve a desired outcome (e.g. creation of geometric shapes).</b></p> <p><i>Use sequence, selection and repetition in programs; work with variables and various forms of input and output.</i></p> <p><b>To use sequence, selection and repetition in a computer program.</b></p>	<p><b>Information Technology</b></p> <p><i>Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.</i></p> <p><b>To use filters to make search engines more effective.</b></p> <p><i>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.</i></p> <p><b>To create a 3-fold leaflet.</b></p>	<p><b>Digital Literacy</b></p> <p><i>Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concern about content and contact.</i></p> <p><b>To develop an understanding of a ‘digital footprint’</b></p> <p><b>To know how to keep social media settings private.</b></p> <p><b>To identify rules for sharing images online.</b></p> <p><b>To describe the positive and negative consequences of sharing images online.</b></p>

Curriculum Skills and Progression Map

	<p><b>To write a program that has a keyboard and mouse input and a screen and speakers output.</b></p> <p><i>Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.</i></p> <p><b>To identify errors in code to create geometric shapes and patterns.</b></p> <p><b>To debug examples and own code.</b></p> <p><i>To use controlling or simulating physical systems; solve problems by decomposing them into smaller parts.</i></p> <p><b>To use decomposition to discover how a game/shape was made in order to design and create their own.</b></p> <p><i>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.</i></p> <p><b>To describe the impact of technology on society, including on people's: spiritual, moral, social and cultural development.</b></p>	<p><b>To design and create a simple touch screen game.</b></p> <p><b>To create a spreadsheet and analyse and evaluate the information.</b></p> <p><b>To create a stop-motion animation.</b></p> <p><b>To choose software to share information with others – poster, leaflet, presentation, video etc.</b></p>	<p><b>To recognise the possible influences and pressures to share images online.</b></p>
<b>Assessment objectives</b>	<b>Computer Science</b>	<b>Information Technology</b>	<b>Digital Literacy</b>

## Curriculum Skills and Progression Map

	<p>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</p> <p>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</p>	<p>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          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</p> <p>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</p>	<p>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          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</p> <p>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</p>
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## Curriculum Skills and Progression Map

		To evaluate results in comparison to the question asked	To review and evaluate the effectiveness of my video
<b>Vocabulary</b>	<p><b>Coding</b> Action, alert, algorithm, bug, code design, command, control, debug, design mode, event, input, object, output, repeat, selection, simulation, sequence, timer, variable</p> <p><b>Online safety</b> Online safety, smart rules, password, reputable, encryption, identity theft, shared image, plagiarism, citations, reference, bibliography</p> <p><b>Spreadsheet</b> Average, advance mode, copy and paste, columns, cells, charts, equals tool, formula, formula wizard, move cell tool, random tool, rows, spin tool, spreadsheet, timer</p> <p><b>Databases</b> Avatar, binary tree, charts, collaborative, data, database, find, record, sort, group and arrange, statistics and reports, table Game creator</p> <p><b>Animation</b>, computer game, customise, evaluation, image, instructions, interactive, screenshot, texture, perspective, playability</p> <p><b>Modelling</b> CAD, modelling, 3D, 2D, viewpoint, polygon, net, points, template, 3D template</p> <p><b>Effective searching</b> Audience, collaboratively, concept, concept map, connection, idea, node, thought, visual</p> <p><b>Microsoft Word</b> Copyright, cursor, document, font, in built styles, merge cells, paragraph formatting, readability, template, text formatting, text wrapping, word art, word processing tool</p>		
<b>Topics taught</b>	<p>Going further with Lego Wedo</p> <p>Introduction to Scratch</p> <p>Hour of code (December)</p>	<p>Flatfile databases</p> <p>Introduction to Spreadsheets</p>	<p>Creating Google Forms and interpreting data</p> <p>Video editing</p> <p>Safer Internet Day</p> <p>E-safety books</p>

## Curriculum Skills and Progression Map

<p><b>Programmes of study</b></p> <p><b>Year 6</b></p>	<p><b>Pupils should be taught:</b></p> <ul style="list-style-type: none"> <li>• design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts</li> <li>• use sequence, selection, and repetition in programs; work with variables and various forms of input and output</li> <li>• use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs</li> <li>• 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</li> <li>• use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content</li> <li>• 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</li> <li>• use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.</li> </ul>		
<p><b>Progression objectives</b></p>	<p><b>Computer Science</b></p> <p><i>To design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.</i></p> <p><b>To design, write and debug a program based on their own ideas for a target audience.</b></p> <p><i>Use sequence, selection and repetition in programs; work with variables and various forms of input and output.</i></p> <p><b>To use sequence, selection, repetition and variables in a computer program.</b></p> <p><b>To write a program that accepts a number of different inputs and produces a number of different outputs.</b></p>	<p><b>Information Technology</b></p> <p><i>Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.</i></p> <p><b>To know there are a range of search engines. (Google, Bing, Yahoo etc.)</b></p> <p><b>To understand there are also site specific search engines. (App store, Google play etc.)</b></p> <p><i>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.</i></p>	<p><b>Digital Literacy</b></p> <p><i>Use technology safely, respectfully and responsibly; recognise acceptable/ Unacceptable behaviour; identify a range of ways to report concern about content and contact.</i></p> <p><b>To explain what is meant by a ‘digital footprint’</b></p> <p><b>To list key applications that we may use now and in the future.</b></p> <p><b>To know why there are age ratings/restrictions for social media, apps and games.</b></p> <p><b>To identify ways to keep yourself and others safe online and offline.</b></p>

Curriculum Skills and Progression Map

	<p><i>Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.</i></p> <p><b>To give clear and precise logical explanations of code.</b></p> <p><b>To detect and correct errors in code.</b></p> <p><i>To use controlling or simulating physical systems; solve problems by decomposing them into smaller parts.</i></p> <p><b>To use decomposition to discover how a game/app was made in order to design and create their own.</b></p> <p><i>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.</i></p> <p><b>To understand how binary numbers work.</b></p> <p><b>To understand the importance of computer code breaking during WWII.</b></p>	<p><b>To use a range of media to create a pitch presentation.</b></p> <p><b>To create an advertising campaign for their app or game.</b></p> <p><b>To conduct market research and analyse data collected.</b></p> <p><b>To design and create a house using Google Sketch-Up.</b></p>	<p><b>To recognise that people may not always be who they say they are online.</b></p> <p><b>To have an understanding of what constitutes a ‘good digital citizen’</b></p> <p><b>To develop understanding of copyright.</b></p>
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## Curriculum Skills and Progression Map

Assessment objectives	Computer Science	Information Technology	Digital Literacy
Vocabulary	<p><b>Coding</b> Action, alert, algorithm, code design, command, control, debug, event, flowchart bug, function, input, object, output, repeat, selection, simulation, tabs, sequence, timer, variables</p> <p><b>Online safety</b> Digital footprint, password, PEGI rating, phishing, screen time, spoof website</p> <p><b>Spreadsheets</b> Average, advance mode, copy and paste, columns, cells, charts, dice, formula, formula wizard, random tool, rows, move cell tool, spreadsheet, timer, spin tool</p>		

## Curriculum Skills and Progression Map

	<p><b>Database</b> Audience, blog, blog page, blog post, collaborative, icon  <b>Text adventures</b> Text-based adventure, concept map, debug, sprite, function  <b>Networks</b> Internet, world wide web, network, router, local area network, wide area network, network cables, wireless  <b>Quizzing</b> Audience, collaboration, concept map, database, quiz  Binary Base 10, base 2, binary, bit, byte, decimal, gigabyte, denary, digit, machine code, integer, kilobyte, switch, megabyte, nibble, switch, transistor, variable</p>		
<p><b>Topics taught</b></p>	<p>Advanced programming with Micro:bit  Going further with Scratch - game design    Hour of code (December)</p>	<p>Internet communication  Using Google Sites - creating a website with a purpose</p>	<p>Sketchup - 3D modelling  Game design - promote your product!    Safer Internet Day  E-safety books</p>



