Computing Progression Documents

Cayton School

Learn from yesterday, seek today and aim for tomorrow

C - Courage	A - Achievement	Y – Your Actions	T - Tolerance	O – Our World	N - Nurturing

Cayton School
Computing Progression Map

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Intent						
Cayton School Vision	*"To deliver the highest standards enabling children and adults to grow, learn and work together where laughter, respect, trust and harmony are highly valued"*					
Cayton School Values	Happy and Harmonious	Confident and Caring	Lively and Life-Long-Learning	Successful and Secure	Proud and Positive	Challenge and Commitment
Why Cayton School Curriculum is unique	We have written our curriculum with a strong emphasis towards Local: Community, History, Geography, Culture and Faith	Our Curriculum has a rich knowledge base and strong skills development	A strong emphasis on vocabulary allows children to learn and apply words in a variety of contexts	Cultural Capital opportunities support children to accomplish the very best they can be	PSHE is a thread that runs throughout our Curriculum	We have written the Curriculum to support children to develop lively, enquiring and creative minds	We understand the importance of a healthy body, healthy mind which is prioritised throughout our Curriculum
Intent	Our overriding belief at Cayton School is that our role as Educators is to ensure children are prepared for the future and have the skills to be life long, curious learners. We passionately believe that life skills as well as academic success is vitally important. Our curriculum is designed to ensure life-long learners who are kind, confident and successful. Our designing of our bespoke curriculum was underpinned by evidence and research in order to challenge thinking and encourage enquiry.					
Cayton Awards Culture	C - Courage	A - Achievement	Y – Your Actions	T - Tolerance	O – Our World	N - Nurturing

Implementation						
Delivering the Curriculum	A whole school, topic based approach	A strong emphasis on positive behaviour through Cayton Awards	A whole school approach to PSHE	Opportunities for collaborative and shared work	The importance of Reading is implemented throughout our Curriculum offer	Every child has a Cayton, Cultural, Capital, Citizenship Passport throughout school
Evidence Based Research	Metacognition 'learning to learn' using scaffolding strategies EEF evidence		Language skills at the centre of Quality First Teaching Rose Report/ EEF		English Curriculum delivery has a strong emphasis on vocabulary and reading Reading spine Doug Lemov	The power of 'empowerment' Dr Raj Persaud/ Hertzog Performance=Skills x Motivation
Pedagogy	Importance of staff well-being	Emphasis on continued professional empowerment Abraham Maslow's Hierarchy of Needs	Monitoring and coaching supporting good practice throughout school	Golden thread supporting school development	Positive culture of fairness and equality	Strong 'Safeguarding' culture throughout school	A welcoming, supportive and inclusive school at the heart of everything we do
Processes and Procedures	A strong focus on assessment for learning throughout school	Training and empowerment of subject leaders to lead their subjects	Clear guidance and structure in teaching core subjects	Robust assessment of core and foundation subjects throughout school	Clear rules and routines set out to support all children	
Implementation	Professional Development and Empowerment of staff supports pedagogical theories and research and equips all teachers to confidently deliver and implement the Curriculum. We implement clear structures and teaching sequences, which underpin the teaching of Reading, Writing and Mathematics. The whole curriculum is taught through 'Metacognitive' pedagogy which encourages children to 'learn to learn' and self-regulate, thus enabling them to question their learning.					
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Impact					
What 'success' looks like at Cayton School	Children develop self-confidence and self-esteem	High Quality Outcomes for all children based on their starting points	Strong feeling of Community	A rich and diverse school culture	Children prepared for life-long learning
Ambition	Children and adults are proud of themselves and proud to be part of the Cayton Community	Progress and attainment at each Key Stage shows outcomes as being above the 'National Average'	Children and adults are kind, courteous and confident	Adults are a positive role model in all that they do and say	Children are self-regulated in their learning and take responsibility for their actions
Evidence	Outcomes at each stage of learning	Pupil and staff voice	Impact of school development priorities	Stakeholder feedback	Formal and Informal assessments	A positive Cayton Awards Culture throughout school
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Developing Technology users at Cayton School

A Technology user at Cayton School will have……

- Competence in coding for a variety of practical and inventive purposes, including the application of ideas within other subjects.

- The ability to connect with others safely and respectfully, understanding the need to act within the law and with moral and ethical integrity.

- An understanding of the connected nature of devices.

- The ability to communicate ideas well by using applications and devices throughout the curriculum.

- The ability to collect, organise and manipulate data effectively.
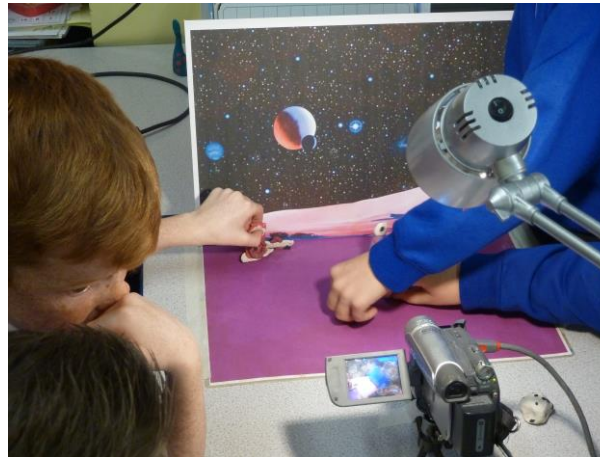
At Cayton School, we foster and promote a culture of inclusion where every student has an equal opportunity to succeed and become the best that they can be. Both leaders and teachers have a shared responsibility to ensure that every child succeeds and are given the abilities to be able to progress in their knowledge, skills and understanding of each subject. Our curriculum extends beyond subject knowledge to include social and emotional competencies and communication skills, which we believe are crucial in order to ensure that students are happy and successful in school and their personal life. As such, we want students to have the knowledge that equips them with the skills to make a positive contribution to society following their education.

Our SEND learners are fully integrated into the mainstream curriculum using high quality differentiated teaching and learning strategies that provide access for all. This is to ensure that they access a bespoke curriculum and are never limited in their abilities. Teachers provide tools and scaffolds to aid children to achieve and where possible reduce these as the skills develop over time. Some of these scaffolds may include:

- Pre-teaching group work looking at specific vocabulary or concepts that the children may find tricky.
- Small group support of an adult to guide them through the activities they are given.
- 1:1 support where and when necessary.
- Word mats that explain some of the key concepts or vocabulary to help the children understand further.
- Knowledge organisers to start units to refer back to if they are unsure.
- Further resources around the classroom to help further understand concepts.
- Adapted worksheets to help with the understanding of wording or explanations.

As a result of the above provision, children will:

- Feel safe, secure and cared for
- Show confidence and resilience in the classroom
- Demonstrate high levels of engagement in activities
- Make progress from their starting points
- Develop independence and skills to support them throughout life
- Work collaboratively with their peers on a shared

Computing and SEND

Learning materials are incorporated that are accessible for learners of all abilities. For learners with special educational needs and disabilities, specific resources or approaches may be required to enable them to access the curriculum. Teachers consider what barriers learners may have within a lesson and embed support strategies to help them overcome these. Teachers scaffold learning so that learners benefit from support during initial phases of learning. Tasks are adapted to make the curriculum accessible to all. For example, tools such as CodeJumper and Blocks4All can be used for learners who are visually impaired.

Intent – Implementation – Impact

Ambition

At Cayton School, it is our intention to enable children to find, explore, analyse, exchange and present information. We also focus on developing the skills necessary for children to be able to use information in an effective way. **We want children to know more, remember more and understand more in computing so that they leave Cayton School computer literate.** Computing skills are a major factor in enabling children to be confident, creative and independent learners and it is our intention that children have every opportunity available to allow them to achieve this. We intend to build a computing curriculum that develops pupil's learning and results in the acquisition of knowledge of the world around them that ensures all pupils can understand and apply the fundamental principles and concepts of computer science. This includes logic, algorithms and data representation whereby children can analyse problems in computational terms and have repeated practical experience of writing computer programs in order to solve such problems. **We intend to build a computing curriculum that prepares pupils to live safely in an increasingly digital society** where children can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems.

Intent

Computing Progression Documents

Early Years Foundation Stage

In planning and guiding what children learn, practitioners must reflect on the different rates at which children are developing and adjust their practice appropriately. Three characteristics of effective teaching and learning are:
- playing and exploring - children investigate and experience things, and 'have a go'
- active learning - children concentrate and keep on trying if they encounter difficulties, and enjoy achievements
- creating and thinking critically - children have and develop their own ideas, make links between ideas, and develop strategies for doing things
  In addition, the Prime Areas of Learning (Personal, Social and Emotional Development, Communication and Language and Physical Development) underpin and are an integral part of children's learning in all areas.

EYFS (Statutory)

This document demonstrates which statements from the 2020 Development Matters are prerequisite skills for computing within the national curriculum. The table below outlines the most relevant statements taken from the Early Learning Goals in the EYFS statutory framework and the Development Matters age ranges for Three and Four-Year-Olds and Reception to match the programme of study for computing. The most relevant statements for computing are taken from the following areas of learning:

• Personal, Social and Emotional Development • Physical Development • Understanding the World • Expressive Arts and Design

Three and Four-Year-Olds	Personal, Social and Emotional Development		Remember rules without needing an adult to remind them.
	Physical Development		Match their developing physical skills to tasks and activities in the setting.
	Understanding the World		Explore how things work.
EYFS	Personal, Social and Emotional Development		Show resilience and perseverance in the face of a challenge. Know and talk about the different factors that support their overall health and wellbeing: - sensible amounts of 'screen time'.
	Physical Development		Develop their small motor skills so that they can use a range of tools competently, safely and confidently
	Expressive Arts and Design		Explore, use and refine a variety of artistic effects to express their ideas and feelings.
ELG	Personal, Social and Emotional Development	Managing Self	Be confident to try new activities and show independence, resilience and perseverance in the face of challenge. Explain the reasons for rules, Know right from wrong and try to behave accordingly.
	Expressive Arts and Design	Creating with Materials	Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.

Computing Progression Documents

	Unit	Early Learning Goals	Outcomes
1	iMake Music	ELG16 – Creating with materials; ELG17 – Being imaginative & Expressive	Creating simple musical compositions using digital tools
2	iMake Media	ELG16 – Creating with materials; ELG17 – Being imaginative & Expressive	Capturing images and use software to combine images with text & effects
3	iMake Videos	ELG16 – Creating with materials; ELG17 – Being imaginative & Expressive	Using a camera/tablet to record moving images
4	iCan Play	ELG1 – Listening & Understanding; ELG7 – Fine Motor Skills; ELG5 – Building relationships	Taking turns playing games both on and offline
5	iCan Move	ELG1 – Listening & Understanding; ELG7 – Fine Motor Skills; ELG5 – Building relationships	Tracing paths; The children use a mouse to play computer games
6	iCan Direct	ELG1 – Listening & Understanding; ELG7 – Fine Motor Skills; ELG5 – Building relationships	Using simple directional language to navigate around a set of obstacles
7	iFind Patterns	ELG1 – Listening & Understanding; ELG12 – Number Pattern	Identifying and talk about patterns; the children create a repeating pattern
8	iAm Logical	ELG1 – Listening & Understanding; ELG11 - Number	Sorting on criteria
9	iOrganise Data	ELG1 – Listening & Understanding; ELG11 - Number	Collecting data and creating simple graphs
10	iSearch Online	ELG1 – Listening & Understanding; ELG9 - Reading	Making simple searches for data organised alphabetically
11	iCan Sequence	ELG1 – Listening & Understanding; ELG11 - Number	Sequencing simple instructions to make something
12	iCan Program	ELG1 – Listening & Understanding; ELG7 – Fine Motor Skills	Giving sequences of commands to a programmable toy
13	iStay Safe	ELG1 – Listening & Understanding; ELG4 – Managing Self	Exploring and explaining simple rules for keeping safe online
14	iMake Art	ELG16 – Creating with Materials	Finding and making collages of 2D shapes
15	iCan Control	ELG1 – Listening & Understanding; ELG11 - Number	Programming a toy to move along a number line
16	iCan Sort	ELG15 – The Natural World	Making predictions about sorting criteria, sort and order objects
17	iCan Turn	ELG1 – Listening & Understanding; ELG2 - Speaking	Designing trails & programming toys to move along a trail with turns
18	iCan Animate	ELG1 – Listening & Understanding; ELG2 – Speaking; ELG17 – Being imaginative & Expressive	Capturing images and animating them using digital tools
19	iTell Stories	ELG1 – Listening & Understanding; ELG2 – Speaking; ELG17 – Being imaginative & Expressive	Recounting a classic tale using digital book creation tools
20	iSend Email	ELG9 – Reading; ELG10 – Writing;	Composing and sending simple emails to a fictional character
21	iCan Model	ELG1 – Listening & Understanding	Using digital tools to explore computer models
22	iMake Pictograms	ELG1 – Listening and Understanding; ELG11 – Number	Collecting and organising data into simple pictograms
23	iCan Surf	ELG16 – Creating with materials	Finding, printing and colouring images
24	iCan Report	ELG16 – Creating with materials; ELG17 – Being imaginative & Expressive	Combing text and images to make a class/school newsletter
25	iCatch Aliens!	ELG16 – Creating with Materials	Using an Augmented Reality app to find hidden aliens
26	iMake Algorithms	ELG1 - Listening and Understanding; ELG2 - Speaking; ELG9 - Reading	Creating algorithms and flowcharts for classic nursery rhymes
27	iGuess Beasts	ELG7 – Fine Motor Skills; ELG11 - Number; ELG14 – People Communities & Culture	Scanning and creating QR (Quick Response) Codes
28	iMake Pixel Art	ELG7 – Fine Motor Skills; ELG11 - Number; ELG16 – Creating with materials; ELG17 – Being imaginative & Expressive	An introduction to image representation

Possible iCompute units

Computing Progression Documents

Key Stage One

Purpose of Study
A high-quality computing education equips pupils to use computational thinking and creativity to understand and change the world. Computing has deep links with mathematics, science and design and technology, and provides insights into both natural and artificial systems. The core of computing is computer science, in which pupils are taught the principles of information and computation, how digital systems work and how to put this knowledge to use through programming. Building on this knowledge and understanding, pupils are equipped to use information technology to create programs, systems and a range of content. Computing also ensures that pupils become digitally literate – able to use, and express themselves and develop their ideas through, information and communication technology – at a level suitable for the future workplace and as active participants in a digital world.

National Curriculum

The national curriculum for computing aims to ensure that all pupils:

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

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

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

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

Coding/ Algorithms	• understand what algorithms are, how they are implemented as programs on digital devices, and that programs execute by following precise and unambiguous instructions
Programming	• create and debug simple programs
Logical Reasoning	• use logical reasoning to predict the behaviour of simple programs
Multimedia Sound and Motion **Using Technology**	• use technology purposefully to create, organise, store, manipulate and retrieve digital content
Technology in our lives **Uses of IT beyond school**	• recognise common uses of information technology beyond school
On-line Safety	• 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

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Key Stage Two

Purpose of Study
A high-quality computing education equips pupils to use computational thinking and creativity to understand and change the world. Computing has deep links with mathematics, science and design and technology, and provides insights into both natural and artificial systems. The core of computing is computer science, in which pupils are taught the principles of information and computation, how digital systems work and how to put this knowledge to use through programming. Building on this knowledge and understanding, pupils are equipped to use information technology to create programs, systems and a range of content. Computing also ensures that pupils become digitally literate – able to use, and express themselves and develop their ideas through, information and communication technology – at a level suitable for the future workplace and as active participants in a digital world.

National Curriculum
The national curriculum for computing aims to ensure that all pupils: • can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation • can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems • can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems • are responsible, competent, confident and creative users of information and communication technology

Coding/ **Develop Programs**	• use sequence, selection, and repetition in programs; work with variables and various forms of input and output
Programming/ **Create Programs**	• design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts
Logical Reasoning	• use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs
Multimedia Sound and Motion **Networks**	• 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
Technology in our lives **Search engines**	• use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content
On-line Safety	• use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact. •
Using Programmes **Handling Data**	• 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.

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Strand/ Thread	1	2	3	4	5	6
Coding **Algorithms** **NC KS1** - understand what algorithms are, how they are implemented as programs on digital devices, and that programs execute by following precise and unambiguous instructions **Developing Programs** **NC KS2** –- use sequence, selection, and repetition in programs; work with variables and various forms of input and output	**iAlgorithm unit** x5 sessions To understand that algorithms are precise instructions that can be followed To follow a simple algorithm To devise a simple algorithm To understand that programs execute by following precise and unambiguous instructions To plan, test and debug a simple algorithm To make predictions about an outcome based on a simple algorithm To understand conditions and outcomes To understand that some statements can only be true or false *iProgram unit 1* To understand that algorithms are implemented as programs on a range of digital devices	**iProgram unit 1** x 6 sessions To understand that an algorithm is a process that consists of a series of steps that achieves a specific goal To understand algorithms can describe everyday activities and can be followed by humans and computer To understand that algorithms are made up of steps To know that steps can be repeated To understand that computers need more precise instructions than humans do To use digital drawing tools (Scratch) to create images To program a simple animation involving movement To write a simple program that produces an output (text) To combine images and text to create a simple animation	**iProgram unit** x6 sessions To understand that a program is a sequence of statements written in a programming language (Scratch) To program an animation that executes a sequence of statements To understand that computer programs containing graphics use x y coordinates and turns are measured in Degrees To program a sequence of instructions that create visual effect To import, create and record sounds To understand that algorithms and programs can involve repetition To predict the outcome of a simple algorithm To use a repeat function to draw a 2D shape To import pictures from a computer and/or the internet To combine images, sounds and movement to create a personal animation *iSimulate*	**iAlgorithm unit** x5 sessions To find the best method of sorting a group of unknown weights into order To understand that information is easier to find in a sorted order To find the best method of sorting a group of unknown weights into order To understand that information is easier to find in a sorted order To understand that algorithms are a set of instructions that complete a task To understand that computers work by following a set of instructions called a program To use decomposition to approach problems To use logical reasoning and abstraction to design algorithms To use decomposition to Approach problems To use logical reasoning and abstraction to design algorithms *iProgram unit 1* *iProgram unit 3* *iProgram unit 4*	**iProgram unit 1** x8 sessions To understand that computer programs containing graphics use x y coordinates and turns are measured in degrees To use conditional (if) statements To understand that some variables can only be true of false (boolean) To understand that programs can do different things if the value of a boolean variable is true or false (conditional statements) To use variables in programs	**iApp unit 1** x6 sessions To understand the value of mobile technology and its future development To use development tools to create an app To understand that procedures are a sequence of statements that can be called repeatedly using only one command To create an app involving variables and procedures To develop strategies for testing and debugging computer programs **iApp unit 2** x7 sessions To explore event driven programming using a text-based programming language To use algorithms to develop a solution to a problem To translate algorithms into code To use abstraction and functions in programs To understand that apps are computer programs that are developed according to a plan To develop an app according to a plan To develop strategies for testing and debugging computer programs
Skills	To **plan, test** and **debug** a simple algorithm	To **use digital drawing tools** (Scratch)	To **import, create** and **record** sounds	To use **logical reasoning** and abstraction to **design algorithms**	To **use variables** in programs	To **develop strategies** for **testing** and **debugging** computer programs
Vocabulary	Algorithm, instruction, sequence, program, debug, repeat, true, false	Coding = Algorithm, instruction, sequence, program, debug, repeat	Program, sequence, selection, repeat, coordinates, x-y axis, import, test, debug	Order, compare, measure, sort, select, algorithm, node, model, decomposition, abstraction, organisation	Sequence, selection, condition, repeat, boolan variable coordinates, x-y axis	Text based programming, decomposition, variable, algorithm, program, abstraction, function, test, debug

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Strand/ Thread	1	2	3	4	5	6
Programming **NC KS1** - create and debug simple programs **Create Programs** **NC KS2** - design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts	**iProgram unit 1** x5 sessions To give instructions to a programmable toy To plan a simple algorithm to that controls a toy To program a virtual object to move to on-screen objects To record a sequence of instructions in a common forma	**iProgram unit 2** x 6 sessions To program an animation using motion blocks To use sequence movement and use triggers in computer programs To use sequence, selection and repetition in computer programs To use events, triggers and sequences in programs To explore cause and effect in ScratchJr To understand the importance of planning a computer program	**iSimulate unit** x 5 sessions To explore the effect of changing variables in a simulation using them to make and test predictions To understand that simulations can help people try things quickly and inexpensively To understand that simulations help us understand difficult concepts To design and produce a computer simulation or adventure	**iProgram unit 1** x6 sessions To understand that a program is a sequence of statements written in a programming language (TurtleArt) To program an turtle to execute a sequence of statements To design a program that makes choices To develop algorithms To combine repetition and conditional statements into a program **iProgram unit 2** x4 sessions To understand that robots need moving parts To understand that robots can be programmed to follow instructions Extended project to design, build and program a robotic model **iProgram unit 3** x2 sessions To solve problems by splitting them into smaller parts (decomposition) To plan and develop algorithms and program **iProgram unit 4** x5 sessions To create custom blocks (procedures) in Scratch To understand that action can be programmed to synchronise To detect and correct errors in a computer	**iProgram unit 2** x8 sessions Learn how to create a world and control a character using the Kodu programming environment To use conditional statements in computer programs (When..Do) To program an object to move towards another by sequencing statements To amend a computer program to accept user input To program objects to move along paths To understand how to create 'levels' in a computer game To understand that computer programs need to be designed To know what to think about when designing a computer program To program a computer game using a design and plan as a basis To develop strategies for testing and debugging computer programs	**iProgram unit 1** x5 sessions To program a computer game by sequencing conditional statements To use variables in programs To use procedures in programs To develop strategies for testing and debugging computer programs **iProgram unit 2** x6 sessions To add an object to a scene To program simple instructions Use procedures to move objects on screen Test and debug an animation To simplify a program using procedures To use conditional statements To use decomposition to devise a storyboard for an animation To develop an animation To test and debug an animation
Skills	To **program** a virtual object to move to on-screen objects	**To explore cause and effect** in ScratchJr	To **design** and **produce** a computer simulation or adventure	To **combine repetition** and **conditional statements** into a program	To **use conditional statements** in computer programs	To **develop strategies** for **testing** and **debugging** computer programs
Vocabulary	Output	Algorithm, instruction, sequence, program, debug, repeat, test	Simulation, rules, choice, variables	Program, sequence, selection, condition, repeat, test, debug	Sequence, selection, condition, repeat, Boolean variable coordinates, x-y axis	Sequence, selection, condition, repeat, Boolean, variable, procedure, test, debug

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Strand/ Thread	1	2	3	4	5	6
Logical Reasoning **NC KS1** - use logical reasoning to predict the behaviour of simple programs **NC KS2** - use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs	*iProgram unit 1* To use logical reasoning to predict the behaviour of simple programs	*iProgram unit 2* To explore cause and effect in ScratchJr	*iSimulate unit* To understand that computer simulations can represent real or imaginary situations To understand that computer simulations are guided by rules	*iProgram unit 1* To understand that computer programs consist of statements that perform a specific task. To understand that statements can be altered To amend an algorithm to change the size of a shape To program a virtual robot to move and draw shapes To understand that commands and actions can be programmed to be executed depending upon whether a condition is true or not *iProgram unit 2* To understand that sequences of commands can be replaced with repeats To understand that robots use sensors to 'see' and 'feel' To understand that robots can be programmed to respond to data by changing behaviour *iProgram unit 3* To understand that procedures in computer programs allow programmers to use a set of commands more than once and that this is called abstraction *iProgram unit 4* To understand the need to reuse code in programming To understand that broadcasts can be used to change scenes in Scratch To understand that code can be remixed and reused to create new content	**iCrypto unit** x 6 sessions To understand that messages can be sent and received secretly To learn encrypt/decrypt simple messages To understand that messages can be sent electronically over distances To understand that data can be transmitted as binary (on or off) Understand the algorithm of a simple shift cipher To use frequency analysis to decipher encrypted text To understand the importance of cryptography historically and today	*iApp unit 1* To understand that apps are computer programs that are developed according to a plan *iApp unit 2* To understand the importance of decomposition (breaking a problem into smaller parts and solve one part at a time) To understand that variables contain values *iProgram unit 1* To understand that the behaviour of a computer program should be planned To understand that programs are developed according to a plan *iProgram unit 2* To understand and use variables in a computer program
Skills	To **use logical reasoning** to predict the behaviour of simple programs	To **explore cause and effect** in ScratchJr	To **understand** that computer simulations are guided by **rules**	To **amend** an algorithm to change the size of a shape	To **learn to encrypt/decrypt** simple messages	To **understand** the importance of **decomposition**
Vocabulary	Output	Algorithm, instruction, sequence, program, debug, repeat, test	Simulation, rules, choice, variables	Program, sequence, selection, condition, repeat, test, debug	Cryptography, encrypt, decrypt, cipher, key, shift, binary, frequency analysis	Text based programming, decomposition, variable, algorithm, program, abstraction, function, test, debug

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Strand/ Thread	1	2	3	4	5	6
Multimedia Sound and Motion **Using Technology** **NC KS1 -** use technology purposefully to create, organise, store, manipulate and retrieve digital content **Networks** **NC KS2** - 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	**iDraw unit** x 5 sessions To investigate simple digital mark-making tools To explore shape and fill tools To draw shapes and fill them in to re-create a picture To explore a range of digital drawing tools To import images and create an eBook **iData unit** x4 sessions To understand why pictograms are useful To collect and organise information to solve a problem To create a pictogram using collected data Sorting information Presenting data using a graph **iModel** x4 sessions To understand that computers can show real events and things To use a mouse to move things accurately on-screen To understand that computers can be used to make choices To understand that a computer can be used to model an environment where choices can be made To understand that a computer model is not an exact replica of real-life environments and/or scenarios To create a representation of a real or fantasy game or story	**iAnimate unit** x6 sessions To understand what an animation is To understand the premise of a stop-frame animation To understand that an animation consists of characters, a stage, props, sound, text and a story To understand the importance of a storyboard in the story planning process To create a storyboard To understand that animations need to be scripted To understand that stop-frame animations involve physical characters, settings and props To work collaboratively in a group to achieve a common goal To create a stop-frame animation *iDo Mail unit* *iProgram unit 1* *iProgram unit 2* **iSearch unit** x5 sessions To understand that the world wide web contains large amounts of information To use links to navigate a website To know that the world wide web can be used to answer questions To navigate a website user hyperlinks To locate specific information using a website To collect information from a number of different online sources and check they are the same	**iConnect unit** x6 sessions To understand that the internet is many computers that are connected To use basic navigation skills to browse the world wide web To understand that copyright is an author's right of ownership and it is illegal to steal other people's material **iNetwork unit** x 4 sessions To understand what a network is To know key parts of a computer network To understand how information is exchanged between devices To understand that the internet is the physical connections between computers and networks To understand how data travels throughout a network To understand that devices on networks have a unique address	**iMail** x 5 sessions To understand that messages can be used to communicate over distance a number of ways To understand how email travels and how to retrieve it To send and reply to emails To attach a file to an email To understand the advantages of attaching files to emails To use email to communicate ideas	**iWeb unit** x5 sessions To understand that the world wide web is one of the services offered on the internet To know that the world wide web consists of many websites and web pages that can be accessed using the internet To know that websites are written in HTML code To read basic HTML code To understand how HTML provides structure for web content	**iNetwork unit** x5 sessions To understand that a computer network is a group of computers that are connected To know that computer networks allow users to communicate and share To understand that the internet is many networks that are connected to each other To know that a router sends/receives information as packets of data To know that internet search engines maintain, and rank, a list (or index) of other websites available on the World Wide Web To know that web pages are written in HTML To recognise and use basic HTML syntax
Skills	To **investigate** simple digital mark-making tools	To **create** a stop-frame animation	To **use basic navigation skills** to browse the world wide web	To **send** and **reply** to emails To **attach** a file to an email	To **read basic HTML** code	To **recognise and use** basic HTML syntax
Vocabulary	iDraw – Digital art, canvas, brush, fill, line, shape tool, undo, edit, save, open, print iData – Data, tally, pictogram iModel – Model, algorithm, instruction, choice	Animation, scene, script, motion, storyboard, props, iSearch - World Wide Web, Network, Internet, Hyperlink, search, URL	iConnect - World Wide Web, network, internet, hyperlink, search, URL, IP address, web, browser, copyright iNetwork – Network, network switch, server, wireless, access point, WAP, WIFI, router, internet, IP address, URL DNS	Email, email address, to, from, attachment, forward	World Wide Web, HTML, CSS, element, tags	Network, router, internet, World Wide Web, IP address, URL, data, packet, search engine, rank, HTKM

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Strand/ Thread	1	2	3	4	5	6
Technology in our lives **Uses of IT beyond school** **NC KS1 -** recognise common uses of information technology beyond school **Search Engines** **NC KS2** - use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content	*iProgram unit 1* To recognise everyday devices that perform an action in response to an instruction **iWrite** Word Processing To recognise that text can be created in a number of ways To use word processing software to create text To understand that a computer can be connected to a printer To select and insert text into a word processing application To open and save a word processing document To understand the value of using a word processor to produce text	**iDoMail unit** x3 sessions To understand that messages can be sent electronically over distances To understand that messages can be sent electronically over distances and that people can reply to them To understand that communication can be images, sound and text *iSafe unit*	No icompute unit Use search engines to support learning in the curriculum *iConnect unit* To understand some of the services available on the internet To use search terms when looking for information using a search engine	No icompute unit Use search engines to support learning in the curriculum	No icompute unit Use search engines to support learning in the curriculum	No icompute unit Use search engines to support learning in the curriculum
Skills	To **use** word processing **software** to create text	To understand that **communication** can be **images, sound and text**	To **use search terms** when looking for information using a search engine	Use a **variety** of search engines	Use **specific** search engines	Understand the **most efficient** search engines to use for a specific task
Vocabulary	iProgram – Alogrithm, instruction, sequence, program, debug, repeat, output iWrite - text, word, processor, key, keyboard, save, print, backspace, return, enter	Email, email address, to, from attachment	iConnect - World Wide Web, network, internet, hyperlink, search, URL, IP address, web, browser, copyright	Topic vocabulary when using search engines to explore and discover using search engines	Topic vocabulary when using search engines to explore and discover using search engines	Topic vocabulary when using search engines to explore and discover using search engines

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Strand/ Thread	1	2	3	4	5	6
On-line Safety **NC KS1** - 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 **NC KS2** - use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	**iSafe unit** x4 sessions and ongoing throughout the year To understand what being online may look like, the different feelings we can experience online and how to identify adults who can help To understand that people online may try to manipulate others, how this can make someone feel and how to identify and approach adults who can help To understand that photos can be shared online To understand the importance of seeking permission before sharing a photo To understand how to identify and approach adults who can help To understand that people online may try to manipulate others, how this can make someone feel and how to identify and approach adults who can help	**iSafe unit** x 5 sessions and ongoing throughout the year To understand that personal information is unique to themselves To understand that personal information should only be given to trusted adults To begin to identify the characteristics of people who are worthy of trust and who can help them make choices that keep them safe To understand that emotions can be a tool to help judge unsafe situations To understand the importance of checking with an adult before participating in an online environment *iDoMail unit* *iSearch unit*	**iSafe unit** x 6 sessions and ongoing throughout the year To identify some of the risks of sharing publicly online To understand some measures that can be taken to stay safe To understand potential consequences of sharing without consent To understand some of the ways we can protect ourselves online against manipulation To understand the need for strong password *iConnect unit* To know the basic steps that can help distinguish safe and credible websites	**iSafe unit** x8 sessions and ongoing throughout the year To distinguish between personal information, which is safe to share online, and private information which is unsafe to share To use keywords in search engines to refine online searches To understand when it is acceptable to use the work of others To use strong passwords To explore strategies for safely managing spam To analyse why private information should not be shared without permission To identify strategies for dealing responsibly with cyberbullying *iMail unit* To understand that messages can be used to communicate over distance a number of ways To understand how email travels and how to retrieve it	**iSafe unit** x6 sessions and ongoing throughout the year To distinguish between personal information, which is safe to share online, and private information which is unsafe to share To understand the risks and benefits of various modes of communication To begin to make sensible and considered judgments about whether or not to trust online content and people when online To identify different forms of cyber bullying To understand what to do if confronted with cyber bullying	**iSafe unit** x9 sessions and throughout the year To recognise the importance of never sharing passwords, except with parents or guardians Know how to create passwords that are hard to guess, yet easy to remember Customize privacy settings for the online services they use Learn specific ways to respond to bullying when you see it Know how to behave if you experience harassment Make good decisions when choosing how and what to communicate and whether to communicate at all Be aware of online tools for reporting abuse
Skills	To **understand** what being online may look like, the **different feelings** we can experience online and how **to identify adults who can help**	To **understand** that **personal information** is u**nique** to themselves	To **identify** some of the **risks** of sharing publicly online	To **identify strategies** for **dealing** responsibly with **cyberbullying**	To **identify** different forms of **cyber bullying** To **understand what to do** if confronted with cyber bullying	**Know how to behave** if you **experience harassment**
Vocabulary	Personal information, trusted adult, permission, cyber bullying	On-line Safety = personal, information, trustworthy, untrustworthy, trusted adult, Internet, online	Privacy settings, online, sharing, consent, strong password, manipulation	Privacy settings, keywords, copyright, strong password, spam, virus, cyberbullying	Personal information, reliable, cyberbullying, SMART	Personal information, reliable, cyberbullying, strong password, privacy settings

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Strand/ Thread	1	2	3	4	5	6
Using Programmes Handling Data **KS2 only** 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			**iData unit** x4 sessions To understand how information in a database is organised To understand the advantages of a computer based database over a paper one To find and enter information to create additional records in a database To demonstrate the knowledge skills and understanding they have learned during this unit **iPodcast** x 6 sessions To understand that technology can be used to control sound To understand that sound can be stored digitally To understand what a podcast is To plan and record a podcast To use digital tools to edit a podcast To combine audio sound and effects To identify the good features of a podcast To suggest improvements for a podcast *iSimulate*	**iAnimate unit** x5 sessions To understand what an animation is To create a scene for an animation To understand that animations can be created using digital tools To create an animated scene To storyboard and create a short animation **iData unit** x 5 sessions To sort record cards using field names To understand that information can be stored as numbers, text and choices (e.g. yes/no) To understand that storing information in an organised way helps answer questions To search a database to answer questions To use the information in a database to create a simple chart	**iDraw unit** x 5 sessions To understand that digital tools can be used to create images To understand that vector images are made up of shapes and lines To use digital tools to improve detail in images To understand that vector images are constructed of layers To design vector images To create vector images To evaluate images and make improvements **iModel** x4 sessions To understand the difference between 2D and 3D shapes To become familiar with basic 3D modelling tools To understand that graphical models can easily be changed To use features of graphical modelling software to develop a 3D model To evaluate and improve 3D models	**iData unit** x4 sessions To understand that spreadsheets can be used to store numerical data and to make calculations To enter a formula to calculate totals To understand that graphs and charts can be created and easily be changed from spreadsheet data To understand the SUM function can be used to create formulas that will perform addition calculations To use a spreadsheet to model a costing exercise **iModel unit** x5 sessions To become familiar with basic Sketchup tools To build a house to scale using Sketchup To use features of graphical modelling software to develop a 3D model To evaluate and improve 3D models To add images to 3D models To import a Sketchup model into Google Earth
Skills			To **understand** how information in a **database** is **organised**	To **create** an animated scene To **sort** record cards using field names	To **design** vector images To **create** vector images To **evaluate** images and make improvements	To **use features** of graphical modelling software to develop a 3D model To **evaluate and improve** 3D models To add images to 3D models
Vocabulary			iData – Field, record, data, database, search, sort iPodcast – Podcast, audio, record, track, edit, trim, crop, effects	iAnimate – Animation, frame, frame rate, frames per second, CGI iData – Data, database, record, file, field, search, sort, chart	idraw – vector, canvas, resize, rotate, fill, stamp, group, layer, zoom, send to front, send to back, bring forward, send backwards iModel – 2D, 3D, model, resize, rotate, zoom in, zoom out, group	iData - Spreadsheet, worksheet, column, row, cell, cell reference, data, formula, range, SUM iModel – 2D, 3D, model, resize, rotate, zoom in, zoom out, group

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Implementation

• A clear and effective, bespoke cross curricular scheme of work that provides coverage in line with the National Curriculum. Teaching and learning should facilitate progression across all key stages within the threads of **Coding** (Algorithms/ Creating Programs), **Programming**, **Logical Reasoning**, **Multimedia Sound and Motion** (Using Technology/ Networks), **Technology in our Lives** (Uses of IT beyond school, Search Engines), **Using Programs** (Handling Data), (**On-line Safety**.

• Access to resources which aid in the acquisition of skills and knowledge.

• Children will have access to the hardware (computers, netbooks, programmable equipment) and software that they need to develop knowledge and skills of digital systems and their applications

• A clear and effective scheme of work that provides coverage in line with the National Curriculum (icompute).

• Teaching and learning should facilitate progression across all key stages within the strands of digital literacy, information technology and computer science. Children will have the opportunity to explore and respond to key issues such as digital communication, cyberbullying, online safety, security, plagiarism and social media.

• Wider Curriculum links and opportunities for the safe use of digital systems are considered in wider curriculum planning.

• The importance of online safety is shown through displays within the learning environment (classrooms, hall and the ICT suite).

• Parents are informed when issues relating to online safety arise and further information/support is provided if required (CPOMS).

• As well as opportunities underpinned within the scheme of work, children will also spend time further exploring the key issues associated with online safety.

Impact

• Children will be confident users of technology, able to use it to accomplish a wide variety of goals, both at home and in school.

• Children will have a secure and comprehensive knowledge of the implications of technology and digital systems. This is important in a society where technologies and trends are rapidly evolving.

• Children will be able to apply the British values of democracy, tolerance, mutual respect, rule of law and liberty when using digital systems.

Children will be able to use technology safely and know what to do to keep themselves safe on-line.