

Computing Long Term Plan

Archbishop Runcie CE First School



Vision

The school first existed as a force for social change and we remember this within our historic original mission as we continue to inspire and transform the minds and hearts of everyone we serve today and, thus, the wider world. Everyone associated with our school will experience life in all its fullness, as promised by Jesus. We do so with **Love and Determination**.

Our original Mission

“A school for the education of children only of the labouring mining and manufacturing and other poorer classes in the Parish of Gosforth and for no other purpose.”

Mission Statement:

At ARFS, we promote educational excellence, for everyone. Our purpose in education is to enable the children, families, staff, Governors and the wider community we serve to flourish. The Christian values of **Love and Determination** are at the core of teaching and culture within the school. We believe this makes us distinctive in the learning experience on offer. This is firmly rooted in the following epistle:

Be courageous; be strong.

Do everything in love.

1 Corinthians 16:13-14

Intent	Implementation	Impact and Next Steps
<p>At Archbishop Runcie Church of England First School, we recognise that technology is a central aspect of life today and that it has changed the world irrevocably and it will continue to do so over the course of our pupils' lives in ways that adults today cannot begin to adequately predict.</p> <p>We aim to instil a sense of enjoyment around using technology and develop pupil's appreciation of its capabilities and the opportunities technology offers to, create, manage, organise and collaborate. Tinkering with software and programs forms a part of the ethos of the scheme as we want to develop pupils' confidence when encountering new technology, which is a vital skill in the ever evolving and changing landscape of technology. Through our curriculum, we intend for pupils not only to be digitally competent and have a range of transferable skills at a suitable level for the future workplace, but also to be responsible online citizens.</p> <p>Our scheme of work enables pupils to meet the end of Key Stage Attainment targets outlined in the National</p>	<p>At Archbishop Runcie our lessons follow the 'Kapow' Computing scheme which ensures a broad and balanced coverage of the National Curriculum In line with the National Curriculum and Ofsted Research Review, our school teaches Computing through three main content areas:</p> <ul style="list-style-type: none"> - Computer Science - Information Technology - Digital Literacy <p>Children begin their Computing journey in Nursery, noticing cause and effect, understanding how to use technology safely, and embedding some of the early knowledge required for Reception and beyond e.g. sequencing in order to program, and understanding that technology is a central aspect of life today. Even though the latest EYFS Framework does not mention technology, Computing is still 'taught' as part of the continuous provision and staff in Nursery make conscious Computing decisions. Computing is taught discretely and regularly from Reception upwards, but is also embedded in other subjects within the curriculum. Children will have access to resources which aid in the acquisition of skills and knowledge, as well as access to the hardware and software that they need to develop knowledge and skills of digital systems and their applications (computers, tablets, programmable equipment). Skills are taught within each year group and built on year on year to ensure attainment targets are met by the end of each key stage.</p> <p>Lessons are categorised into five key areas, which we return to in each year group making it clear to see prior and future learning for pupils and how this teaching fits into their wider learning journey.</p> <ul style="list-style-type: none"> • Computing systems and networks: Identifying hardware and using software while exploring how computers communicate and connect to one another. • Programming: Understanding that a computer operates on algorithms, and learning how to write, adapt and debug code to instruct a computer to perform set tasks. 	<p>The impact will be that children will leave our school equipped with a range of skills to enable them to succeed in their next steps in education and be active participants in the ever-increasing digital world.</p> <p>Pupils will:</p> <ul style="list-style-type: none"> • Be critical thinkers and able to understand how to make informed and appropriate digital choices in the future • Understand the importance that computing will have going forward in both their education and working life and in their social and personal futures • Show a clear progression of technical skills across all areas of the National Curriculum – computer science, information technology and digital literacy

<p>curriculum and the aims align with those in the National curriculum. Our computing curriculum is also using in conjunction with our RSE & PSHE scheme, our Computing scheme of work also satisfies all the objectives of the DfE's Education for a Connected World framework.</p> <p>We aim to equip children for life in a digital world, including developing their understanding of appropriate online behaviour, copyright issues, being discerning consumers of online information and healthy use of technology.</p>	<ul style="list-style-type: none"> • Creating media: Learning earning how to use various devices — record, capture and edit content such as videos, music, pictures and photographs. • Data handling: Ensuring that information is collected, recorded, stored, presented and analysed in a manner that is useful and can help to solve problems. • Online Safety: Understanding the benefits and risks of being online — how to remain safe, keep personal information secure and recognising when to seek help in difficult situations. <p>Kapow Primary Computing scheme of work has been designed as a spiral curriculum with the following principles in mind:</p> <ul style="list-style-type: none"> • Cyclical: Pupils revisit the five key areas throughout Key Stage 1 and 2. • Increasing depth: Each time a key area is revisited, it is covered with greater complexity. • Prior knowledge: Upon returning to each key area, prior knowledge is utilised so pupils can build on previous foundations, rather than starting again. <p>The curriculum has been taken from the Kapow scheme of work for computing, with an added unit on Micro:bits. Each year group begin with online safety. This has been and will continue to be refined both from practical use within school and external advice, including our computing consultants GEM Education and local networks in both Gosforth and Newcastle. In addition, the curriculum has also been discussed and agreed with our feeder middle school with close links continually built, particularly for our Year 4s.</p>	<ul style="list-style-type: none"> • Be able to use technology both individually and as part of a collaborative time • Be aware of online safety issues and protocols and be able to deal with any problems in a responsible and appropriate manner • Have an awareness of developments in technology and have an idea of how current technologies work and relate to one another • Meet the end of key stage expectations outlined in the National Curriculum for Computing -
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Nursery	Autumn Term	Spring Term	Summer Term
Continuous Provision throughout year	<p>Use and operate simple technological toys in everyday life.</p> <p>Using technology in the role play area e.g. mobile phone, laptop, remote control, kettle, till.</p> <p>Using an iPad to complete a set program/activity.</p> <p>Using the interactive whiteboard to complete a set program/activity.</p> <p>Other Early computing skills such as algorithms and decomposition completed by responding to instruction, ordering and sequencing, working out different ways to do things and breaking problems down into smaller steps. This could be via creating/following a recipe, creating a treasure map and following daily routines.</p>		
Computing focus	Cause and effect	Using technology safely	Computer Science – Algorithms and Decomposition
Activities to support	<p>Children are introduced to simple technological toys such as mobile phones, remote controls and battery operated toys within the role play area.</p> <p>Children are exposed to torches within the dark tent. (Autumn 2 – Dark nights, bright lights)</p>	<p>Children are taught how to remain safe when online via stories and activities (Clicking Chicken story, Traditional Tales internet safety)</p>	<p>Children are introduced to remote control vehicles, coding caterpillar, then Bee Bots.</p>
Specific vocabulary to teach	<ul style="list-style-type: none"> • device • mobile phone • remote control • battery operated • torch. 	<ul style="list-style-type: none"> • internet • safety • iPad. 	<ul style="list-style-type: none"> • remote control • program • coding • direction (left, right, forward, backwards)

Reception	Autumn Term		Spring Term		Summer Term	
Computing Focus	Set up continuous provision in your classroom	Computer systems and networks	Programming 1	Computer systems and networks	Programming 2	Data handling
Devices used	Mixture of unplugged and iPads	Laptop – keyboard and mouse	iPad, camera	A selection of disconnected computer hardware: mouse, keyboard, motherboard, USB stick, system fan, hard drive, monitor, computer tower, speakers	Bee-Bots	iPad, camera
Computing concept (procedural knowledge)	Computing through continuous provision	Using a computer	All about instructions	Exploring hardware	Programming Bee-Bots	Introduction to data
	Set up continuous provision in your classroom	Learning about the main parts of a computer and how to use the keyboard and mouse. Learning how to log in and out.	The children learn to receive and give instructions and understand the importance of precise instructions.	Tinkering and exploring with different computer hardware and learning to operate a camera	Children learn about directions, experiment with programming a Bee-bot/Blue-bot and tinker with hardware.	Children sort and categorise data and are introduced to branching databases and pictograms.
National Curriculum Coverage (substantive knowledge)	Development Matters Physical Development - Develop their small motor skills so that they can use a range of tools competently, safely and confidently.	Development Matters Physical Development - Develop their small motor skills so that they can use a range of tools competently, safely and confidently.	Development Matters, Communication and Language -Understand how to listen carefully and why listening is important. -Describe events in some detail. -Use talk to help work our problems and organise thinking and activities, and to explain how things work and why they might happen. ELG: Self-Regulation - Give focused attention to what the teacher says, responding appropriately even when engaged in activity, and show an ability to follow	Development Matters, Communication and Language -Learn new vocabulary. - Use new vocabulary throughout the day. -Ask questions to find out more and to check they understand what has been said to them. -Articulate their thoughts and ideas in well-formed sentences. - Use talk to help work out problems and organise thinking and activities and to explain how things work and why they might happen. Personal, Social and Emotional Development	Personal, Social and Emotional Development -ELG: Managing Self -Be confident to try new activities and show independence, resilience and perseverance in the face of challenge	Development Matters, Communication and Language - Articulate their thoughts and ideas in well-formed sentences. - Use talk to help work out problems and organise thinking and activities, and to explain how things work and why they might happen. ELG: Listening, Attention and Understanding- Listen attentively and respond to what they hear with relevant questions, comments and actions when being read to and during whole class

			<p>instructions involving several ideas or actions.</p> <p>ELG: Managing Self - Be confident to try new activities and show independence, resilience and perseverance in the face of challenge.</p> <p>ELG: Building Relationships - Work and play cooperatively and take turns with others.</p> <p>Physical Development -Know and talk about the different factors that support their overall health and wellbeing. -Further develop the skills they need to manage the school day successfully</p>	<p>-See themselves as a valuable individual.</p> <p>Physical Development - Develop their small motor skills so that they can use a range of tools competently, safely and confidently.</p> <p>-Confidently and safely use a range of large and small apparatus.</p>		<p>discussions and small group interactions.</p> <p>ELG: Listening, Attention and Understanding - Make comments about what they have heard and ask questions to clarify their understanding.</p> <p>ELG: Speaking – Participate in small group, class and one-to-one discussions, offering their own ideas, using recently introduced vocabulary</p>
Specific vocabulary to teach	<ul style="list-style-type: none"> • computer • monitor • keyboard • mouse 	<ul style="list-style-type: none"> • clicking • dragging • log in • log out 	<ul style="list-style-type: none"> • instruction • algorithm 	<ul style="list-style-type: none"> • batteries • iPad • hardware 	<ul style="list-style-type: none"> • algorithm • bee-bot • direction • sequence 	<ul style="list-style-type: none"> • data • category • pictogram
Continuous Provision	iPad games to consolidate iPad usage			Bee-Bot games e.g. Snakes and Ladders, mazes etc.		
Possible lesson progression/ activities	Children are exposed to a range of technological devices and explore using them.	Lesson 1 – Keyboards Learning what a keyboard is and how to locate relevant keys.	Lesson 1 – Following Instructions The class follow instructions as part of practical activities and games.	Lesson 1 – Explore hardware tinker tray Pupils explore and tinker with different hardware and are introduced to the relevant vocabulary.	Lesson 1 – Understanding arrows Children learn the meaning of directional arrows and follow a simple sequence of instructions.	Lesson 1 – Loose parts play Children sort and categorise objects.
		Lesson 2 – Logging in and out Learning to log in and out of a device.	Lesson 2 – Giving Instructions Children guide a partner through an obstacle	Lesson 2 – Real world tinker tray Children explore and tinker with hardware and	Lesson 2 – Introducing the bee-bot Children experiment with programming a bee-bot	Lesson 2 – Sorting ourselves Children sort themselves into groups based upon

			course to develop an understanding of giving simple instructions.	identify where technology is used in places that they are familiar with, such as homes and schools.	and tinker with hardware to develop familiarity and introduce relevant vocabulary.	given categories before undertaking this activity independently.
		Lesson 3 – Mouse control Learning what a mouse is and developing control when using a mouse	Lesson 3 – Dressing up instructions The children follow instructions as part of a dressing up game and learn to give simple instructions.	Lesson 3 – Pictures of play Children learn to operate a basic camera to take pictures of their independent play.	Lesson 3 – Simple Bee-bot programming Children experiment with programming a bee-bot and .to learn how to give simple commands.	Lesson 3 – Yes or no? Children respond to yes/no questions as an introduction to branching database.
		Lesson 4 - Mouse control, clicking Developing basic mouse skills including moving and clicking.	Lesson 4 – Debugging Instructions Children follow instructions as part of a practical handwashing activity and to learn to debug when things go wrong.	Lesson 4 - Picture walk Children further develop their photography skills, taking photos of their discoveries on a walk around the school grounds.	Lesson 4 - Understanding algorithms Children follow and algorithm as part of an unplugged game and learn to debug instructions when things go wrong.	Lesson 4 – Creating a branching database Children follow instructions as part of a practical handwashing activity and to learn to debug when things go wrong.
		Lesson 5 - Mouse control, clicking and dragging Further developing mouse skills, including the ability to click and drag.	Lesson 5 – Predictions Pupils learn that an algorithm is a set of instructions to carry out a task, in a specific order. They use logical reasoning to read simple instructions and predict the outcome.	Lesson 5 - Class photo album Working with an adult, children take selfie photograph to create a class gallery.	Lesson 5 - Programming a bee-bot Children experiment with programming a bee-bot and .to learn how to give simple commands. The children learn how to debug instructions, with the help of an adult, when things go wrong.	Lesson 5 – Predictions Children learn branching databases through physical sorting and categorising.

Year 1	Autumn Term		Spring Term		Summer Term	
Computing Focus	Online safety	Computer systems and networks	Programming	Programming	Creating media	Data handling
Devices used	iPad	Computers (both in groups and paired as appropriate)	iPads	Bee-bots	iPads	Computers
Computing concept (procedural knowledge)	Online Safety - Learning how to stay safe online and how to manage feelings and emotions when someone or something has upset us.	Improving mouse skills - Learning how to login and navigate around a computer; developing mouse skills; learning how to drag, drop, click and control a cursor to create works of art.	Algorithms unplugged - Algorithms, decomposition and debugging are made relatable to familiar contexts, following directions, learning why instructions need to be specific.	Programming Bee-Bots – Introducing programming through the use of a Bee-Bot and exploring its functions.	Digital Imagery - Taking and editing photos, searching for and adding images to a project.	Introduction to data - Learning what data is and the different ways it can be represented. Learning why data is useful and the ways it can be gathered and recorded.
National Curriculum Coverage (substantive knowledge)	IT - Recognise common uses of information technology beyond school. DL - 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.	DL - Use technology purposefully to create, organise, store, manipulate and retrieve digital content. IT - Recognise common uses of information technology beyond school. DL - 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.	CS - Understand what algorithms are, how they are implemented as programs on digital devices and that programs execute by following precise and unambiguous instructions. CS - Create and debug simple programs.	CS - Understand what algorithms are, how they are implemented as programs on digital devices and that programs execute by following precise and unambiguous instructions. CS - Create and debug simple programs. CS - Use logical reasoning to predict the behaviour of simple programs.	CS - Use logical reasoning to predict the behaviour of simple programs. DL - Use technology purposefully to create, organise, store, manipulate and retrieve digital content. IT - Recognise common uses of information technology beyond school. DL - 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.	DL - Use technology purposefully to create, organise, store, manipulate and retrieve digital content. IT - Recognise common uses of information technology beyond school.
Specific vocabulary to teach	<ul style="list-style-type: none"> • app • device • digital footprint • going online • in-person interactions • internet 	<ul style="list-style-type: none"> • account • click • clipart • drag • drag and drop • duplicate 	<ul style="list-style-type: none"> • algorithm • artificial intelligence • bug • chunks • code • debug 	<ul style="list-style-type: none"> • algorithm • Bee-Bot • code • debug • demonstration • explain 	<ul style="list-style-type: none"> • background • blurred • camera • clear • crop • delete 	<ul style="list-style-type: none"> • bar chart • block graph • branching databases • categorise • chart • click and drag

	<ul style="list-style-type: none"> • offline activity • online activity • online experience • online interactions • online safety • personal information • pop-up • posting online • report • responsible digital citizen • screen time • sharing online • stranger • technology • trusted adult • website 	<ul style="list-style-type: none"> • fill • image • layers • left-click • log in • log off • mouse • password • predict • redo • resize • right-click • screen (monitor) • software • tool • username • undo 	<ul style="list-style-type: none"> • decompose • device • directions • input • instructions • manageable • order • organise • output • program • problem • solution • specific • tasks • virtual assistant 	<ul style="list-style-type: none"> • explore • filming • inputting • instructions • precise • predict • program • review • test • tinker • video 	<ul style="list-style-type: none"> • device • digital camera • download • drag and drop • edit • filter • image • import • internet • keyword • online • photograph • resize • save as • search engine • sequence • software • storage space • visual effects 	<ul style="list-style-type: none"> • compare • data • data collection • edit • input • line graph • information • label • pictogram • pie chart • process • record • resize • sort • table • tally • values
Possible lesson progression/ activities	Lesson 1 – Using the internet safely To recognise what the internet is and how to use it safely.	Lesson 1 – Logging in To log in to a computer and access a website.	Lesson 1 – What is an algorithm To understand what an algorithm is	Lesson 1 - Getting to know a Bee-Bot To explore a new device.	Lesson 1 – Planning a photo story To understand and create a sequence of pictures.	Lesson 1 – Zoo data To represent data in different ways
	Lesson 2 – Online emotions To identify how people's feelings and emotions can be affected by online content.	Lesson 2 – Click and drag skills To develop mouse skills.	Lesson 2 – Algorithm pictures To follow instructions precisely to carry out an action	Lesson 2 - Making a Bee-Bot video To create a demonstration video.	Lesson 2 – Taking photos To take clear photos	Lesson 2 – Picture data To use technology to represent data.
	Lesson 3 – Always be kind and considerate. To recognise how to treat others both online and in person.	Lesson 3 – Drawing shapes To use mouse skills to draw and edit shapes.	Lesson 3 – Virtual assistants To understand that computers and devices around us use inputs and outputs.	Lesson 3 - Precise instructions To plan and follow a precise set of instructions.	Lesson 3 – Editing photos To edit photos	Lesson 3 – Mini beast hunt To collect and record data
	Lesson 4 - Posting and sharing online To recognise the importance of being careful when posting and sharing online.	Lesson 4 - Drawing a story To draw a scene from a story using digital tools	Lesson 4 - Step by step To understand and be able to explain what decomposition is.	Lesson 4 - Bee-Bot world To program a device.	Lesson 4 - Search for images To search for and import images	Lesson 4 - Animal branching databases To sort data.

	<p>Lesson 5 - How much time should we spend on technology? To discuss ways to balance time spent online and offline.</p>	<p>Lesson 5 - Self portrait To create a self-portrait using digital techniques.</p>	<p>Lesson 5 - Debugging directions To explain how to debug an algorithm.</p>	<p>Lesson 5 - Three little pigs To create a program that tells a story.</p>	<p>Lesson 5 - Photo collage To make a photo collage.</p>	<p>Lesson 5 - Inventions To design an invention to gather data.</p>
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Year 2	Autumn Term		Spring Term		Summer Term	
Computing focus	Online Safety	Computer systems and networks	Programming	Data Handling	Programming	Programming
Devices Used	Laptop/iPad	Laptop	Laptop/iPad	Laptop/iPad	Laptop/iPad	Laptop/Micro-bit
Computing concept (procedural knowledge)	Online Safety – Learning how to keep information safe and private online; who we should ask before sharing things online and how to give, or deny permission online.	What is a computer? – Exploring what a computer is by identifying how inputs and outputs work and how computers are used in the wider world to design their own computerised invention.	Algorithms and debugging – Developing an understanding of; what algorithms are, how to program them and how they can be developed to be more efficient, introduction of loops.	International Space Station – Learning how data is collected, used and displayed and the scientific learning of the conditions needed for plants and humans to survive.	Scratch Jr – Exploring what ‘blocks’ do by carrying out an informative cycle of predict>test>review. Programming a familiar story and make a musical instrument	Micro-bits - A sequence of lessons ideal for getting started with the micro:bit. Students develop their use of some core computing concepts by coding and making practical projects including step counters, nightlights, and games
National Curriculum Coverage (substantive knowledge)	DL - Use technology purposefully to create, organise, store, manipulate and retrieve digital content IT - Recognise common uses of information technology beyond school DL - 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	CS - Use logical reasoning to predict the behaviour of simple programs DL - Use technology purposefully to create, organise, store, manipulate and retrieve digital content IT - Recognise common uses of information technology beyond school	CS - Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions. CS - Create and debug simple programs. CS - Use logical reasoning to predict the behaviour of simple programs.	CS - Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions. DL - Use technology purposefully to create, organise, store, manipulate and retrieve digital content.	CS - Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions. CS - Create and debug simple programs. CS - Use logical reasoning to predict the behaviour of simple programs. DL - Use technology purposefully to create, organise, store, manipulate and retrieve digital content.	CS - Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions. CS - Create and debug simple programs. CS - Use logical reasoning to predict the behaviour of simple programs. DL - Use technology purposefully to create, organise, store, manipulate and retrieve digital content.
Specific vocabulary to teach	<ul style="list-style-type: none"> accepting consent denying permission fake giving permission offline online password permission personal information 	<ul style="list-style-type: none"> battery camera computer desktop device digital content digital recorder electricity input invention 	<ul style="list-style-type: none"> abstraction algorithm artificial intelligence bug data debug decompose loop predict 	<ul style="list-style-type: none"> algorithm data digital content interactive map interpret monitor sensor temperature thermometer 	<ul style="list-style-type: none"> algorithm animation blocks bug CGI code debug fluid icon imitate 	<ul style="list-style-type: none"> algorithm code hardware LED loops output program software string

	<ul style="list-style-type: none"> • pop-up • pressure • private information • real • reliable • sharing online • source • trusted adult 	<ul style="list-style-type: none"> • keyboard • laptop • monitor • mouse • output • scanner • screen • system • tablet • technology • wire 			<ul style="list-style-type: none"> • loop • ScratchJR • sequence • sound recording 	
Possible lesson progression/ activities	Lesson 1- What happens when I post online? To decide which information is safe to share online.	Lesson 1- Computer parts To recognise the parts of a computer.	Lesson 1- What is an algorithm? To understand what an algorithm is	Lesson 1- Homes in space To understand how computers can help humans survive in space.	Lesson 1 - Using ScratchJr To explore a new application.	Lesson 1 – What is a micro-bit? – To understand what a micro-bit is and how it works.
	Lesson 2 - How do I keep my things safe online? To practise keeping information safe and private online.	Lesson 2 - Inputs To recognise how technology is controlled.	Lesson 2 - Algorithm pictures To follow instructions precisely to carry out an action.	Lesson 2 - Space bag To create a digital drawing of essential items for life in space.	Lesson 2 - Creating an animation To create an animation.	Lesson 2 – Name badge To understand how to code the micro:bit for the first time by making a name badge.
	Lesson 3 - It's my choice To recognise when to deny permission online.	Lesson 3 - Technology safari To recognise technology.	Lesson 3 - Virtual assistants To understand that computers and devices around us use inputs and outputs	Lesson 3 - Warmer, colder To understand the role of sensors on the ISS.	Lesson 3 - Making a musical instrument To use characters as buttons.	Lesson 3 – Beating heart To start to learn about sequences and loops by making simple animations on the micro:bit's LED display
	Lesson 4 - Is it true? To recognise that not everything online is true.	Lesson 4 - Invention To create a design for an invention.	Lesson 4 - Step by step To understand and be able to explain what decomposition is.	Lesson 4 - Experiments in space To create an algorithm for growing a plant in space.	Lesson 4 - Programming a joke To follow an algorithm.	Lesson 4 – Emotion badge To make an emotion badge to show how they feel, using the micro:bit's button inputs and LED display output.

		Lesson 5 - Real-world role play To understand the role of computers.	Lesson 5 - Debugging directions To know how to debug an algorithm.	Lesson 5 - Goldilocks planets To interpret data.	Lesson 5 - The Three Little Pigs' algorithms To plan and use code to create an algorithm.	Lesson 5 - Step counter To turn their micro:bits into step counters (pedometers) using the micro:bit's built-in movement sensor, the accelerometer, and variables to keep track of how far they have walked.
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Year 3	Autumn Term		Spring Term		Summer Term	
Computing focus	Online Safety	Computing systems and networks	Computing systems and networks	Creating media	Programming	Programming
Devices Used	Laptops/iPads	Networked devices	Laptops	iPads	Laptop/iPad	Laptops/micro:bits
Computing concept (procedural knowledge)	Online safety – learning the difference between fact, opinion and belief; and how to deal with upsetting online content. Knowing how to protect personal information online.	Networks – learning what a network is and how devices communicate and share information.	Journey inside a computer - Assuming the role of computer parts and paper versions of computers to consolidate understanding of how a computer works.	Video trailers – Developing digital video skills to create trailers, with special effects and transitions.	Scratch – exploring the programme Scratch, following the predict>test>review cycle. Learning about ‘loops’ and programming an animation, story and game.	Micro:bits - Creating more complex applications
National Curriculum Coverage (substantive knowledge)	<p>DL/IT - 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.</p> <p>DL/IT - Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.</p> <p>DL - Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.</p>	<p>DL/IT - 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.</p> <p>DL/IT - Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.</p> <p>CS/IT - 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.</p>	<p>CS - Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.</p> <p>CS - Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.</p> <p>DL/IT - 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.</p>	<p>DL/IT - Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.</p> <p>CS/IT - 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.</p>	<p>CS - Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.</p> <p>CS - Use sequence, selection, and repetition in programs; work with variables and various forms of input and output.</p> <p>CS - Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.</p> <p>DL/IT - Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content.</p> <p>CS/IT - Select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range</p>	<p>CS - Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts.</p> <p>CS - Use sequence, selection, and repetition in programs; work with variables and various forms of input and output.</p> <p>CS - Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.</p>

					of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information.	
Specific vocabulary to teach	<ul style="list-style-type: none"> • age restrictions • autocomplete • content • digital device • fact • fake news • hoax • online emotions • permission • privacy settings • smart devices • social media platforms 	<ul style="list-style-type: none"> • device • file • internet • network • network switch • packet data • router • server • the cloud • user • Wi-Fi • wired • wireless • wireless access point 	<ul style="list-style-type: none"> • CPU (central processing unit) • disassemble • GPU (graphics processing unit) • Hard drive • infinite loop • memory • output • photocopier • program • QR Code • RAM (random access memory) • ROM (read only memory) • storage 	<ul style="list-style-type: none"> • animation • background • decompose • digital device • drawing • flipbook • frames • moving images • object • onion skinning • plan • still images 	<ul style="list-style-type: none"> • algorithm • animation • application • code • code block • debug • decompose • interface • loop • predict • program • remixing code • repetition code • review • Scratch • sprite • tinker 	<ul style="list-style-type: none"> • algorithm • code • hardware • LED • loops • output • program • sequence • software • string • variables
Possible lesson progression/ activities	Lesson 1 - Beliefs, opinions and facts on the internet To understand how the internet can be used to share beliefs, opinions and facts.	Lesson 1 - What is a network? To recognise what a network is.	Lesson 1 - Inputs and outputs To recognise basic inputs and outputs	Lesson 1 - What is animation? To understand what animation is.	Lesson 1 - Tinkering with Scratch To explore a programming application.	Lesson 1 – Recap previous learning To make an animated smiley heart and flashing buttons (makecode.microbit.org)
	Lesson 2 - Who should I ask? To explain what should be done before sharing information online.	Lesson 2 - A file's journey To demonstrate how information moves around a network.	Lesson 2 - Building a paper laptop To identify the components inside a laptop.	Lesson 2 - My first animation To create a stop motion animation.	Lesson 2 - Using loops To use repetition (a loop) in a program.	Lesson 2 - Introduce Pet Hamster To interact with your very own hamster called Cyrus
	Lesson 3 - When being online makes me upset To identify the effects that the internet can have on people's feelings	Lesson 3 - How a website works To demonstrate how a website works.	Lesson 3 - Following instructions To understand the purpose of computer parts.	Lesson 3 - Planning my project To plan my stop motion animation.	Lesson 3 - Making an animation To program an animation.	Lesson 3 - Countdown To create a musical countdown sequence.

	<p>Lesson 4 - Sharing of information To understand the ways personal information can be shared on the internet.</p>	<p>Lesson 4 - Routers To explore the role of a router.</p>	<p>Lesson 4 - Computer memory To understand the purpose of computer parts.</p>	<p>Lesson 4 - Creating my project To create a stop motion animation.</p>	<p>Lesson 4 - Storytelling To program a story.</p>	<p>Lesson 4 – Morse chat To learn to send morse code messages to a pig named Skye.</p>
	<p>Lesson 5 - Rules of social media platforms To understand the rules for social media platforms.</p>	<p>Lesson 5 - What is packet data? To identify the role of packet data.</p>	<p>Lesson 5 - Dismantling a tablet To decompose a tablet computer.</p>	<p>Lesson 5 - Creating my project To create a stop motion animation.</p>	<p>Lesson 5 - Programming a game To program a game.</p>	<p>Lesson 5 – Clap Lights To turn your micro:bits lights on or off when you clap.</p>

Year 4	Autumn Term		Spring Term		Summer Term	
Computing focus	Online safety	Computing systems and networks	Programming	Creating media	Data handling	Programming
Devices Used	Laptop/iPad	Laptop	Laptop/iPad	Laptop/iPad	Laptop/iPad	Laptop/micro:bits
Computing concept (procedural knowledge)	Online safety – Searching for information and making a judgement about the probable accuracy; recognising adverts and pop-ups; understanding that technology can be distracting.	Collaborative learning – learning how to work collaboratively and exploring a range of collaborative tools. .	Further coding with Scratch – Revisiting the key features and beginning to use ‘variables’ in code scripts.	Computational thinking – Solving problems effectively using the four areas of abstraction, algorithm, design, decomposition and pattern recognition.	Investigating weather – Researching and storing data on spreadsheets and designing a weather station.	Micro-bits Creating games with Microbits. This sequence has children create simple games then experiment by making one of their own.
National Curriculum Coverage (substantive knowledge)	DL/IT – Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content. DL – Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	DL/IT – 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. CS/IT – 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.	CS – Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts. CS – Use sequence, selection, and repetition in programs; work with variables and various forms of input and output. CS – Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs. CS/IT – 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.	CS – Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts. CS – Use sequence, selection, and repetition in programs; work with variables and various forms of input and output. CS – Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs. CS/IT – 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.	CS – Use sequence, selection, and repetition in programs; work with variables and various forms of input and output. CS/IT – 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. DL – Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.	CS – Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts. CS – Use sequence, selection, and repetition in programs; work with variables and various forms of input and output. CS – Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs. CS/IT – 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.

Specific vocabulary to teach	<ul style="list-style-type: none"> • ad • advertisement • belief • bot • computer • distraction • fact • hashtag • implications • in-app purchases • influencer • opinion • program • recommendation • reliable • risk • screen time • search results • snippets • sponsored • trustworthy 	<ul style="list-style-type: none"> • animations • average • bar chart • collaboration • comment • contribution • data • edited • email account • icon • insert • link • multiple choice • numerical data • pie chart • presentations • resolved • reviewing comments • slides • software • spreadsheets • survey • teamwork • themes • transitions 	<ul style="list-style-type: none"> • broadcast block • code blocks • conditional • coordinates • decomposition • features • game • information • negative numbers • orientation • parameters • position • program • project • script • sprite • stage • tinker • variables 	<ul style="list-style-type: none"> • abstraction • algorithm • code • computational thinking • decomposition • input • logical reasoning • output • pattern recognition • script • sequence • variable 	<ul style="list-style-type: none"> • Accurate • Climate zone • Collaboration • Condensation • Cylinder • Degrees • Extreme weather • Heat sensor • Pinwheel • Satellite • Script • Sensitive • Sensor data • Solar panel • Tablet/Digital camera • Temperature • Thermometer • Tornado 	<ul style="list-style-type: none"> • Abstraction • Algorithms • Collaboration • Communication • Control • Debugging • Decomposition • Evaluation • Input • Output • Patterns • Process • Program • Repetition • Selection • Sensors • Sequence • Variables
Possible lesson progression/ activities	Lesson 1 - What happens when I search online? To describe how to search for information within a wide group of technologies and make a judgement about the probable accuracy.	Lesson 1 - Teamwork To understand that software can be used to work online collaboratively.	Lesson 1 - Scratch reminder To recall the key features of Scratch.	Lesson 1 - What is computational thinking? To understand that computational thinking is made up of four key strands.	Lesson 1 - What's the weather? To log data taken from online sources in a spreadsheet.	Lesson 1 – Rock, paper, scissors To make the rock, paper scissors game with sound and challenge your friend.
	Lesson 2 - How do companies encourage us to buy online?	Lesson 2 - Sharing a document	Lesson 2 - Identifying what code does To understand how a Scratch game works by	Lesson 2 - Decomposition To understand what decomposition is and how	Lesson 2 - Weather stations To design a weather station.	Lesson 2 – Coin flipper To make a simple coin toss game

	To describe some of the methods used to encourage people to buy things online.	To understand how to contribute to someone else's work effectively.	using decomposition to identify key features.	to apply it to solve problems.		
	Lesson 3 - Fact, opinion or belief? To explain why lots of people sharing the same opinions or beliefs online do not make those opinions or beliefs true.	Lesson 3 - Slide presentations To understand how to create effective presentations.	Lesson 3 - Introduction to variables To understand what a variable is and how to make one.	Lesson 3 - Abstraction and pattern recognition To understand what pattern recognition and abstraction mean.	Lesson 3 - Extreme weather To design an automated machine to respond to sensor data.	Lesson 3 - 7 second game To make a 7 second game to press a button exactly at 7 seconds.
	Lesson 4 - What is a bot? To explain that technology can be designed to act like or impersonate living things.	Lesson 4 - Google Forms To understand how to create and share Google Forms.	Lesson 4 - Making a variable To understand how to make a variable in Scratch.	Lesson 4 - Algorithm design To understand how to create an algorithm and what it can be used for.	Lesson 4 - Satellites and forecasts To understand how weather forecasts are made.	Lesson 4 - Tug of LED To build a button smashing rope pulling game using LED's
	Lesson 5 - What is my Tech Timetable like? To explain how technology can be a distraction and identify when I might need to limit the amount of time spent using technology.	Lesson 5 - Shared spreadsheets To understand how to use a shared spreadsheet to explore data.	Lesson 5 - Times tables project To use knowledge of how variables work to create a quiz.	Lesson 5 - Applying computational thinking To combine computational thinking skills to solve a problem.	Lesson 5 - Presenting forecasts To use tablets or digital cameras to present a weather forecast.	Lesson 5 - Design your own game. Children should use the tools gained in lessons 1-4 to create their own game – simple ideas may be variations of the game's prior, but children should be allowed time to experiment.

Appendix - Useful Links

Website	Context	Additional Information
Kapow Primary School Schemes of Work, Lesson Plans and CPD (kapowprimary.com)	Used for lessons/units of work within LTP	Assessment and other resources also available
Microsoft Microbit https://makecode.microbit.org	Used for Microbit sequences	This isn't the only site available for Microbits but it has the resources required for each project in the LTP.
Squiggle https://swiggle.org.uk	Safer internet search engine	This is a safer internet search engine that should be encouraged to be used, particularly for KS1. However, given the ubiquity of Google, children should be exposed to safer use of Google at KS2.
Kiddle https://www.kiddle.co	Another safer internet engine	As above
Code.org www.code.org	Coding resource This forms the backbone of the coding curriculum.	Username: admin@archbishop.newcastle.sch.uk Password: Archbishop!2020
Scratch https://scratch.mit.edu	Scratch is a powerful coding resource that is a simplified version of Javascript which is used across the internet.	For children who need significant extension, examine some of the projects on Scratch in consultation with the Computing lead.