Computing

Progression of Knowledge & Skills

Curriculum Intent

At John Ruskin Primary School, children are offered a variety of learning opportunities using information technology in order to engage, motivate and prepare them for future life; working towards mastery of Computing. As an increasingly digital world is their reality, we have made a concerted effort to provide an appropriate, balanced, challenging and creative curriculum underpinned everyday by teachers that model proficient use of technology. This is essential in developing children's skills, knowledge and understanding of computers and technology, not just as a curriculum subject, but also as a way to implement blended learning across the school.

Our Computing curriculum focuses on a progression of knowledge and skills in digital literacy, computer science and information technology, in a way that follows a sequence to build on previous learning. E-safety is revisited repeatedly throughout the year to help embed the education of using technology responsibly and carefully, being mindful of how children's behaviour, words and actions can affect others.

It is our intention that children become autonomous, independent users of computing technologies, gaining confidence and enjoyment from their activities so that every child leaves John Ruskin digitally literate and ready to thrive in Computing subjects in secondary school.

	Information Technology		**Computer Science**		**Digital Literacy**	
	NC Objectives	Skills/Knowledge	NC Objectives	Skills/Knowledge	NC Objectives	Skills/Knowledge
EYFS	Seeks to acquire basic skills with IT equipment e.g. turning on and operating equipment.	• I can recognise some ways in which the internet can be used to communicate.	Children recognise that a range of technology is used in places such as homes and schools. They	• I can follow simple oral algorithms • I can spot simple patterns	Understand how to keep themselves physically safe around IT equipment. Wires/ sockets/ on and off button.	• I know that work I create belongs to me. • I can name my work so that others

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		• I can give examples of how I (might) use technology to communicate with people I know. • I can sort physical objects, take a picture and discuss what I have done with support. • I can play on a touch screen game and use computers/keyboards/mouse in role play • I can dictate short, clear sentences into a digital device.	select and use technology for particular purposes.	• I can sequence simple familiar tasks • I can use a mouse, touch screen or appropriate access device to target and select options on screen • I can input a simple sequence of commands to control a digital device with support		know it belongs to me. • I can identify rules that help keep us safe and healthy in and beyond the home when using technology. • I can begin to talk about how I can use the internet to find things out.
	Vocabulary					
Year 1	Use technology purposefully to *create* digital content Use technology purposefully to *store* digital content Use technology purposefully to *retrieve* digital content	• I can type words on a digital device. •I can sort images or text into two or more categories on a digital device. • I can collect information on a topic. • I can edit a photo with simple tools e.g. resize • I can use a paint/drawing app to create a digital image • I can record my voice and add different effects.	Understand what algorithms are Create simple programs	• I understand what algorithms are • I can write simple algorithms • I understand the sequence of algorithms is important • I can create a simple program for a purpose • I understand that algorithms are implemented as programs on	Use technology safely Keep personal information private Recognise common uses of information technology beyond school	• If something happens that makes me feel sad, worried, uncomfortable or frightened I can give examples of when and how to speak to an adult I can trust. • I can explain why it is important to be considerate and kind to people online. • I can describe how to behave

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		• I can use the internet to find things out with adult support. • I can use simple keywords in search engines		digital devices • I can use sequence in programs		online in ways that do not upset others and can give examples. • I can recognise more detailed examples of information that is personal to me (e.g. where I live, my family's names, where I go to school).
	Vocabulary					
Year 2	Use technology purposefully to *organise* digital content Use technology purposefully to *manipulate* digital content	• I can copy and paste images and text • I can add images alongside text. • I can edit a photo (crop, filters, etc) • I can select and use tools to create digital imagery - controlling the pen and using the fill tool • I can use keywords in search engines. • I can demonstrate how to navigate a simple webpage to get to information	Understand how algorithms are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions Create and debug simple programs Use logical reasoning to predict the	• I can write algorithms for everyday tasks • I can use logical reasoning to predict the outcome of algorithms • I understand decomposition is breaking objects/processes down • I can implement simple algorithms on digital devices • I can debug algorithms	Use technology respectfully Identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies	• I can explain how other people's identity online can be different to their identity in real life. • I can give examples of how I might use technology to communicate with others I don't know well • I can give examples of bullying behaviour and how it could look online.

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		I need (e.g. home, forward, back buttons; links, tabs and sections).	behaviour of simple programs	• I understand programs execute by following precise and unambiguous instructions		• I understand how bullying can make someone feel. • I can talk about how someone can/would get help about being bullied online or offline. I can describe why other people's work belongs to them. • I can recognise that content on the internet may belong to other people. • I can explain why I should always ask a trusted adult before I share any information about myself online. • I can recognise how passwords can be used to protect information and devices. • I can explain why some information I find online may not be true.

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Year 3	Use search technologies effectively Use a variety of software to accomplish given goals Collect information Present information Design and create content	• I can edit the style and effect of my text and images to make my document more engaging and eye-catching. For example, borders and shadows. • I can use cut, copy and paste to duplicate and organise text. • I can start to input simple data into a spreadsheet. • I can annotate an image with text • I can confidently take and manipulate photos using a range of tools, pens, brushes and effects	Write programs that accomplish specific goals Use sequence in programs Work with various forms of input Work with various forms of output	• I can create algorithms for use when programming • I can decompose tasks into separate steps to create an algorithm • I understand abstraction is focusing on important information • I can identify patterns in an algorithm I can use repetition in algorithms • I can design and create programs • I can write programs that accomplish specific goals I can work with various forms of input • I understand that computers in a school are connected together in a	Use technology responsibly Identify a range of ways to report concerns about contact	• I can explain what is meant by the term 'identity'. • I can explain how I can represent myself in different ways online. • I can explain ways in which and why I might change my identity depending on what I am doing online (e.g. gaming; using an avatar; social media). • I can give examples of technology-specific forms of communication (e.g. emojis, acronyms, text speak). • I can explain some risks of communicating online with others I don't know well. • I can describe rules about how to

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				network • I understand why computers are networked		behave online and how I follow them. • I can explain the difference between a 'belief', an 'opinion' and a 'fact'.
	Vocabulary					
Year 4	Select a variety of software to accomplish given goals Select, use and combine internet services Analyse information Evaluate information Collect data Present data Appreciate how search results are selected	• I can combine digital images from different sources, objects, and text to make a final piece of work e.g. posters, documents, eBooks, scripts, leaflets. • I can input data into a spreadsheet and export the data in a variety of ways: charts, bar charts, pie charts. • I understand how data is collected. • I can create an interactive eBook introducing hyperlinks. • I can create an eBook with text, images and sound. • I can enhance digital images and photographs using crop, brightness, contrast & resize	Design, write and debug programs that accomplish specific goals Debug programs Use repetition in programs Control or simulate physical systems Use logical reasoning to detect and correct errors in programs Understand how computer networks can provide multiple services, such as the World Wide Web	• I can use abstraction to focus on what's important in my design • I can write increasingly more precise algorithms for use when programming. • I can use simple selection in algorithms • I can use logical reasoning to detect and correct errors in programs • I can work with various forms of output • I understand that servers on the Internet are located across the planet	Understand the opportunities computer networks offer for communication Identify a range of ways to report concerns about content Recognise acceptable/unacceptable behaviour	• I can explain how my online identity can be different to the identity I present in 'real life' • Knowing this, I can describe the right decisions about how I interact with others and how others perceive me. • I can describe strategies for safe and fun experiences in a range of online social environments • I can give examples of how to be respectful to others online.

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				• I understand how the Internet enables us to collaborate		• I can explain why I need to think carefully about how content I post might affect others, their feelings and how it may affect how others feel about them (their reputation). • I can describe how I can search for information within a wide group of technologies (e.g. social media, image sites, video sites). • I can describe some of the methods used to encourage people to buy things online (e.g. advertising offers; in-app purchases, pop-ups) and can recognise some of these when they appear online.
	Vocabulary					
Year 5	Combine a variety of software to accomplish given goals	• I can start to apply other useful effects to my documents such as hyperlinks.	Solve problems by decomposing them into smaller parts	• I can solve problems by decomposing them into smaller parts	Understand the opportunities computer networks offer for collaboration	• I can explain how identity online can be copied, modified or altered.

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	Select, use and combine software on a range of digital devices Analyse data Evaluate data Design and create systems Appreciate how search results are ranked.	• I can import sounds to accompany and enhance the text in my document. • I can organise and reorganise text on screen to suit a purpose • I can use simple formulae to solve calculations including =sum and other statistical functions • I can edit and format difference cells in a spreadsheet • I can create and export an interactive presentation including a variety of media, animations, transitions and other effects. • I can enhance digital photos and images using crop, brightness and resize tools	Use selection in programs Work with variables Use logical reasoning to explain how some simple algorithms work Use logical reasoning to detect and correct errors in algorithms Understand computer networks, including the internet	• I can use selection in algorithms • I can recognise the need for conditions in repetition within algorithms • I can use logical reasoning to explain how a variety of algorithms work • I can use logical reasoning to detect and correct errors in algorithms • I can evaluate my work and identify errors • I can use conditions in repetition commands • I can work with variables • I can create programs that control or simulate physical systems • I understand how we view web pages on the Internet • I use search technologies effectively	Be discerning in evaluating digital content.	• I can demonstrate responsible choices about my online identity, depending on context • I can explain that there are some people I communicate with online who may want to do me or my friends harm. I can recognise that this is not my/our fault. • I can make positive contributions and be part of online communities. • I can describe some of the communities in which I am involved and describe how I collaborate with others positively • I can describe ways that information about people online can be used by others to make judgments about an individual.

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				• I appreciate how pages are ranked in a search engine		• I can explain why some information I find online may not be honest, accurate or legal. • I can explain why information that is on a large number of sites may still be inaccurate or untrue. I can assess how this might happen (e.g. the sharing of misinformation either by accident or on purpose).
	Vocabulary					
Year 6	Project using a range of software to design and create content	• I can confidently choose the best application to demonstrate my learning. • I can format text to suit a purpose. • I can discuss the audience and purpose of my content. • I can choose applications to communicate to a specific audience. • I can evaluate my own content and consider improvements. • I can evaluate and discuss images explaining effects	Create a program in a block based language using inputs and outputs.	• I can recognise, and make use, of patterns across programming projects • I can write precise algorithms for use when programming • I can identify variables needed and their use in selection and repetition • I can decompose code into sections for effective debugging	Discuss scenarios involving online risk Be a good online citizen and friend Judge what sort of privacy settings might be relevant to reducing different risks	• I can describe ways in which media can shape ideas about gender. • I can identify messages about gender roles and make judgements based on them. • I can challenge and explain why it is important to reject inappropriate messages about gender online.

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		and filters that have been used to enhance the media.		• I can critically evaluate my work and suggest improvements • I can use a range of sequence, selection and repetition commands combined with variables as required to implement my design		• I can describe issues online that might make me or others feel sad, worried, uncomfortable or frightened. I know and can give examples of how I might get help, both on and offline. • I can explain why I should keep asking until I get the help I need. • I can show I understand my responsibilities for the well-being of others in my online social group. • I can explain how impulsive and rash communications online may cause problems (e.g. flaming, content produced in live streaming). • I can demonstrate how I would support others (including those who are having difficulties) online.

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						• I can demonstrate ways of reporting problems online for both myself and my friends. • I can explain how I am developing an online reputation which will allow other people to form an opinion of me. • I can describe some simple ways that help build a positive online reputation • I can demonstrate strategies to enable me to analyse and evaluate the validity of 'facts' and I can explain why using these strategies are important. • I can identify, flag and report inappropriate content.
	Vocabulary					

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Year 7	Understand the hardware and software components that make up computer systems, and how they communicate with one another and with other systems understand how instructions are stored and executed within a computer system; understand how data of various types (including text, sounds and pictures) can be represented and manipulated digitally, in the form of binary digits	I can collect, organise and present data and information in digital content. I know the difference between data and information. I can use filters or can perform single criteria searches for information. I can perform more complex searches for information e.g. using Boolean and relational operators. I know that computers collect data from various input devices, including sensors and application software. I know that computers collect data from various input devices, including sensors and application	Design, use and evaluate computational abstractions that model the state and behaviour of real-world problems and physical systems Use 2 or more programming languages, at least one of which is textual, to solve a variety of computational problems;	I can design solutions (algorithms) that use repetition and two-way selection i.e. if, then and else. I can use diagrams to express solutions. I can use logical reasoning to predict outputs, showing an awareness of inputs. I can create programs that implement algorithms to achieve given goals. I can declare and assign variables I can use post-tested loops e.g. 'until', and a sequence of selection statements in programs, including	understand a range of ways to use technology safely, respectfully, responsibly and securely, including protecting their online identity and privacy; recognise inappropriate content, contact and conduct, and know how to report concerns undertake creative projects that involve selecting, using, and combining multiple applications, preferably across a range of devices, to achieve challenging goals, including collecting and analysing data and meeting the needs of known user	I know the difference between the internet and internet service e.g. world wide web. I can show an awareness of, and can use a range of internet services e.g. VOIP. I know what is acceptable and unacceptable behaviour when using technologies and online services. I can make judgements about digital content when evaluating and repurposing it for a given audience.

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		software I know the difference between hardware and application software, and their roles within a computer system.		use of if…then… else statement.		