



## Computing

### Our End Goal:

#### What will our computing students be able to do when they leave us?

By the time pupils leave St Joseph's Primary School, we aim to develop pupils who are responsible, confident and creative users of technology, who apply computational thinking beyond the Computing curriculum. They will become digitally literate and are active participants in a digital world. They will know how to stay safe whilst using technology and on the internet, minimising risk to themselves and others. It is vital that all children understand and follow our agreed E-Safety rules and know who to contact if they have concerns, including the use of report buttons. Our children will have had repeated practical experience writing computer programs in order to solve problems, including logic & algorithms. They will have the ability to ask and answer questions through collecting, analysing, evaluating and presenting data and information. Ultimately, they will have a clear understanding how digital networks work and the services they provide. This will enable them to use search options effectively whilst understanding the need to evaluate the relevance of content. The children will be respectful, responsible and competent digital citizens; they will have the knowledge to support themselves and others online.

Curriculum Coverage (NC) What are the most basic requirements from the National Curriculum?		
EYFS	Key Stage One (Year 1 and 2)	Key Stage Two (Year 3, 4, 5 and 6)
<u>Connected to relevant early learning goals</u>  <u>Understanding Technology</u> Technology	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	Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact  Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts
<u>E-Safety</u> Self-confidence and self-awareness	Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by	Use sequence, selection, and repetition in programs; work with variables and various forms of input and output

Managing feelings and behaviour	following precise and unambiguous instructions	Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs
<u>Digital literacy</u> Exploring and using media and materials	Create and debug simple programmes	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
Being imaginative	Use technology purposefully to create, organise, store, manipulate and retrieve digital content	Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content
<u>Programming</u> Understanding	Recognise common uses of information technology beyond school	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
Moving and Handling		

### Spiral curriculum

The units for key stages 1 and 2 are based on a spiral curriculum. This means that each of the themes are revisited regularly (at least once in each year group), and pupils revisit each theme through a new unit that consolidates and builds on prior learning within that theme. This style of curriculum design reduces the amount of knowledge lost through forgetting, as topics are revisited yearly. It also ensures that connections are made even if different teachers are teaching the units within a theme in consecutive years.

PROCEDURAL KNOWLEDGE - What skills do we want our computing students to have? Analyse, evaluate and solve problems How will these skills build on what went before and help prepare our children for what is coming next?						
	<i>Computer Science Theory and Online Safety</i>	<i>Programming</i>	<i>Information Technology</i>	<i>Digital Literacy</i>		
EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<i>Discuss the use of</i>	<i>Discuss and explore how to use</i>	<i>Use a list of trusted, previsited websites</i>	<i>Use search engines</i>	<i>Use search engines</i>	<i>Use the internet/search</i>	<i>Use the internet/search</i>

<p>everyday technology such as TVs, phones etc</p> <p>Save work to a designated place</p> <p>Click and drag on PC, iPad and smartboard</p> <p>Use keyboard to type short, simple words</p>	<p>technology safely and carefully.</p> <p>Recognising technology in school and using it responsibly</p> <p>Choosing appropriate tools in a program to create art, and making comparisons with working non-digitally</p> <p>Writing short algorithms for floor robots, and predicting program outcomes</p> <p>Exploring object labels, then using them to sort and group objects by properties</p> <p>Using a computer to create and format text, before comparing to writing non-digitally</p>	<p>to search the internet effectively and safely. Use this skill to research a given topic</p> <p>Identifying IT and how its responsible use improves our worlds in school and beyond</p> <p>Capturing and changing digital photographs for different purposes</p> <p>Creating and debugging programs, and using logical reasoning the make predictions</p> <p>Collecting data in tally charts and using attributes to organise and present data on a computer</p> <p>Using a computer as a tool to explore rhythms and melodies, before</p>	<p>effectively and safely</p> <p>Understand how to keep information private and how to report concerns.</p> <p>Identifying that digital devices have inputs, processes, and outputs, and how devices can be connected to make networks</p> <p>Capturing and editing digital still images to produce a stop-frame animation that tells a story</p> <p>Creating sequences in a block-based programming language to make music</p> <p>Building and using branching databases to group objects using yes/no questions</p> <p>Creating documents by modifying text,</p>	<p>effectively and safely</p> <p>To use blogging and email confidently to communicate and support learning.</p> <p>Recognising the internet as a network of networks including WWW, and why we should evaluate online content</p> <p>Capturing and editing audio to produce a podcast, ensuring that copyright is considered</p> <p>Using a text-based programming language to explore count-controlled loops when drawing shapes.</p> <p>Recognising how and why data is collected over time, before using data loggers to carry out an investigation</p>	<p>tools effectively and safely with support from adults and begin to understand the importance of using/reproducing the information</p> <p>To enhance learning in and out of school by choosing the appropriate technology (email, seesaw etc...)</p> <p>Recognising IT systems in the world and how some can enable searching on the internet</p> <p>Planning, capturing and editing video to produce a short film</p> <p>Exploring conditions and selection using a programmable microcontroller</p> <p>Using a database to order data and create charts to answer questions</p>	<p>tools effectively and safely without support from adults and begin to understand the importance of using/reproducing the information</p> <p>To use a range of devices (handheld and not) to extend learning, understanding and competency of ICT skills in the real world.</p> <p>Exploring how data is transferred by working collaboratively online</p> <p>Designing and creating webpages, giving consideration to copyright, aesthetics, and navigation</p> <p>Exploring variables when designing and coding a game</p>
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	Designing and programming the movement of a character on screen to tell stories.	creating a musical composition  Designing algorithms and programs that use events to trigger sequences of code to make an interactive quiz	images and page layouts for a specified purpose  Writing algorithms and programs that use a range of events to trigger sequences of actions.	Manipulating digital images, and reflecting on the impact of changes and whether the required purpose is fulfilled  Using a block-based programming language to explore count-controlled and infinite loops when creating a game	Creating images in a drawing program by using layers and groups of objects  Exploring selection in programming to design and code an interactive quiz	Answering questions by using spreadsheets to organise and calculate data  Planning, developing, and evaluating 3D computer models of physical objects  Designing and coding a project that captures inputs from a physical device
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PROPOSITIONAL KNOWLEDGE - What key concepts or knowledge will our computing students have? What knowledge do we want to emphasise? How will knowledge be built on what went before and prepare our children for what is coming next?						
Computer Science Theory and Online Safety		Programming		Information Technology		Digital Literacy
EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Have a basic understanding of online safety	Learn on a basic level what the internet is/ can do.	Know how to safely use the internet to research a project	Understand how to use the internet, in particular social media sites safely.	Understand how the school network works and to understand strong and weak passwords.	Understand how and why the internet can be used to find information.	Understand how social media works and how to stay safe whilst using it.
Know the parts of a PC and what they do	Understand that the internet can be dangerous and that they need to stay safe on the internet.	Understand how to use the internet, specifically social media sites, safely.	Understand how to use search engines safely.	Generate, develop, organise and present work using ICT.	Understand how to create and use online accounts safely.	Understand viruses and download/upload, focusing on safety.
Understand how to use PC mouse and keyboard		Understand how to choose a computer	To create a simple presentation on a		Understand why	

<p>Know how to take a picture/film digitally</p> <p>Open and close PC programmes e.g. word, powerpoint... and save work.</p>	<p>Understand how to login, save a document and shut down a PC safely</p> <p>Find and use 'WORD' to write short sentences</p> <p>Use simple instructions (move forward, left, right, back) to code</p> <p>Learn that an algorithm is a set of instructions</p>	<p>programme to suit a purpose.</p> <p>Use a PC and other devices with increasing confidence</p> <p>Understand how to find bugs in a programme and suggest ways to fix a problem</p> <p>Understand how to predict outcomes of an algorithm and suggest possible problems (bugs)</p>	<p>topic, including animations and sounds.</p> <p>Choose a programme to create documents that are fit for purpose.</p> <p>Use appropriate programmes such as, paint, 2simple and digital devices to record pictures, diagrams, melodies and sound files to suit a purpose.</p> <p>Understand how to build a complex series of instructions.</p> <p>Understand how to use instructions to control devices</p>	<p>Understand how to choose an appropriate programme to create 2d and 3d design.</p> <p>Increased understanding of how to use instructions in a sequence.</p> <p>Understanding of how to find bugs in a set of instructions.</p>	<p>websites, games and other media have age restrictions.</p> <p>Understand how to use word, powerpoint, excel and emails to a high standard.</p> <p>To use an appropriate programme to carry out a challenge or solve a problem</p> <p>Save and load procedures (instructions) to a computer.</p> <p>Understand different ways to find and debug code</p>	<p>Understand and use terms related to the internet such as WWW, URL and ISP</p> <p>Understand how to create an email account safely with help from adults.</p> <p>Understand how to create a webpage with hyperlinks</p> <p>To explain exactly what each part of a code does within the sequence.</p> <p>To apply debugging skills to ensure the code works.</p>
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