

Southway Junior School



COMPUTING Curriculum

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.

AIMS

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.

KEY STAGE 2

- **design, write and debug programs** that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts
- use **sequence, selection, and repetition** in programs; work with variables and various forms of input and output
- use **logical reasoning** to **explain** how some simple **algorithms** work and to detect and correct errors in algorithms and programs
- 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
- use **search technologies** effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content
- 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
- **use technology safely**, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.



COMPUTING curriculum map

Year group	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Year 3	<u>Me and My World</u>	<u>Me and My World</u>	<u>Raiders & Invaders</u>	<u>Raiders & Invaders</u>	<u>Battles and Bangs</u>	<u>Battles and Bangs</u>
Year 4	<u>Victorian Towns and Twisted Tales</u>	<u>Victorian Towns and Twisted Tales</u>	<u>Mysterious Maya</u>	<u>Mysterious Maya</u>	<u>To Infinity and Beyond</u>	<u>To Infinity and Beyond</u>
Year 5	<u>Power and Palaces</u>	<u>Power and Palaces</u>	<u>We'll Meet Again</u>	<u>We'll Meet Again</u>	<u>Short Glorious Greeks unit</u>	<u>Seas, Storms & Survival</u>
Year 6	<u>Frozen in Time</u>	<u>Frozen in Time</u>	<u>Walk Like an Egyptian</u>	<u>Walk Like an Egyptian</u>	<u>Blood, Bones and Body Bits</u>	<u>Blood, Bones and Body Bits</u>

Curriculum Progression



COMPUTING Curriculum

Foci	Year 3 Me and My World Raiders & Invaders Battles and Bangs	Year 4 Victorian Towns & Twisted Tales Mysterious Maya To Infinity and Beyond	Year 5 Power and Palaces / Tudors World War II Glorious Greeks / Rivers	Year 6 Frozen in Time / Stone Age Walk like an Egyptian Blood Bones & Body Bits
Programming and logical reasoning	I can put programming commands into a sequence to achieve a specific outcome. I keep testing my program and can recognise when I need to debug it. I can use repeat commands. I can describe the algorithm I will need for a simple task. I can detect a problem in an algorithm which could result in.	I can use an efficient procedure to simplify a program. I can use a sensor to detect a change which can select an action within my program. I know that I need to keep testing my program while I am putting it together. I can recognise an error in a program and debug it. I can recognise that an algorithm will help me sequence more complex programs. I recognise that using algorithms will also help solve problems in other learning such as maths, science and design technology.	I can break an open-ended problem up into smaller parts. I can use logical thinking to solve an open-ended problem by. I can refine a procedure using repeat commands to improve a program. I can use a variable to increase programming possibilities. I can change an input to a program to achieve a different output. I can use 'if' and 'then' commands to select an action. I can use logical reasoning to detect and debug mistakes in a program. I use logical thinking, imagination and creativity to extend a program.	I can deconstruct a problem, breaking them up into parts. I can explain and program each of the steps in my algorithm. I can evaluate the effectiveness and efficiency of my algorithm while I continually test the programming of that algorithm. I can recognise when I need to use a variable to achieve a required output. I can use a variable and operators to stop a program. I can use different inputs (including sensors) to control a device or onscreen action and predict what will happen. I can use logical reasoning to detect and correct errors in algorithms and programs.

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Select, use and combine a variety of software to present information and data, including multimedia (audio, video and images)	Presenting information: I can search a ready-made database to answer questions. I can collect data to help me answer a question. Multimedia: I can create different effects with different technology tools. I can combine a mixture of text, graphics and sound to share my ideas and learning. I can use appropriate keyboard commands to amend text on my device, including making use of a spellchecker.	Presenting information: I can organise data in different ways. I can choose the best way to present data to my friends. Multimedia: I can use photos, video and sound to create an atmosphere when presenting to different audiences. I am confident to explore new media to extend what I can achieve. I can change the appearance of text to increase its effectiveness. I can create, modify and present documents for a particular purpose. I can use a keyboard confidently and make use of a spellchecker to write and review my work.	Presenting information: I can use a spreadsheet and database to collect and record data. I can present data in an appropriate way. Multimedia: I can use text, photo, sound and video editing tools to refine my work. I can use the skills I have already developed to create content using unfamiliar technology. I can select, use and combine the appropriate technology tools to create effects that will have an impact on others. I can select an appropriate online or offline tool to create and share ideas.	Presenting information: I can check the data I collect for accuracy and plausibility. I can interpret the data I collect. I can present the data I collect in an appropriate way. Multimedia: I can talk about audience, atmosphere and structure when planning a particular outcome. I can confidently identify the potential of unfamiliar technology to increase my creativity. I can combine a range of media, recognising the contribution of each to achieve a particular outcome. I can tell you why I select a particular online program for a specific purpose.

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Using technology safely (E-safety) and responsibly.	I can recall the 'SMART' internet acronym rules and can begin to explain what they mean in real-life. I can talk about what makes a secure password and why they are important. I can make good choices about how long I spend online.	I can choose a secure password when I am using a website. I know that anything I post online can be seen by others. I can help my friends make good choices about the time they spend online.	I protect my password and other personal information. I can explain why I need to protect myself and my friends and the best ways to do this, including reporting concerns to an adult. I know that anything I post online can be seen, used and may affect others. I can talk about the dangers of spending too long online or playing a game. I can explain the importance of communicating kindly and respectfully. I can discuss the importance of choosing an age- appropriate website or game. I can explain why I need to protect my computer or device from harm.	I protect my password and other personal information. I can explain the consequences of sharing too much information about myself online. I support my friends to protect themselves and make good choices online, including reporting concerns to an adult. I can explain the consequences of spending too much time online or on a game. I can explain the consequences to myself and others of not communicating kindly and respectfully. I protect my computer or device from harm on the internet. I comment positively and respectfully online.

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Technology in our lives: Understanding networks and the internet Discerning and evaluating digital content	I can save and retrieve work on the internet, the school network or my own device. I can use a search engine to help me in my work. I can identify whether search results are adverts or not, thereby allowing me to see where the real results begin. I understand that anyone can produce and publish information on the internet and question what could happen as a result (misinformation).	I can use tabs to help me find information when using search engines. I can begin to realise that information on the internet is not always accurate or correct. I can identify key words to use when searching safely on the World Wide Web. I think about the reliability of information I read on the World Wide Web.	I can check the validity of information I gather by referring to more than one source. I can understand that information can be biased and therefore unreliable. I can use a search engine to find appropriate information and check its reliability. I can explain why a source might be more reliable than another when checking multiple sources for validity. I can describe the different parts of a webpage. I can find out who the information on a webpage belongs to.	I can use search engine techniques to make searches accurate (e.g. using hyphens, quotes, colons, related etc.) I can use my digital literacy to question if something on the Internet seems unreliable. I understand that social media and the Internet can skew reality (e.g. Instagram filters, social media creating unrealistic expectations). I can see the benefits and limitations of crowd-sourced information sites (e.g. Wikipedia). I can talk about the way search results are selected and ranked. I can tell you about copyright and acknowledge the sources of information that I find online. I know that websites can use my data to make money and target their advertising.



Resources to Support

COMPUTING Curriculum

WEBSITES

- <https://scratch.mit.edu/> – Scratch official website
- <https://www.childnet.com/resources/looking-for-kidsmart> - SMART internet rules

BOOKS

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PHYSICAL RESOURCES

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Vocabulary Progression		
Basic / beginning Years 1 & 2	Recognise Identify Describe Observe Select Categorise Classify Sequence Compare and contrast Recall Reason/speculate	
Developing Years 3 & 4	Summarise Synthesise Explain Demonstrate understanding	
Specialised Years 5 & 6	Empathise Reach informed conclusions Make reasoned judgements Justify Apply Evaluate Critique Hypothesise	