



Byfleet Primary School - Computing Skills Progression

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.

By the end of Key Stage 1, pupils should be taught to:

- understand what algorithms are; how they 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 behaviour of simple programs
- use technology purposefully to create, organise, store, manipulate and retrieve digital content
- recognise common uses of information technology beyond school
- 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.

By the end of Key Stage 2, pupils should be taught to:

- 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.



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Aspect	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Communication	Explain simply that digital technology can be used to connect with others locally and globally.	Use digital technology appropriately to communicate and connect with others locally and globally.	Explain the advantages and disadvantages of communicating electronically and strategies for preventing issues.	Explain actions to report and prevent cyberbullying.	Demonstrate appropriate online behaviour and apply a range of strategies to protect themselves and others from potential online dangers, inappropriate behaviour and bullying.	Recognise that sending intimate images and content and using offensive language online is a risk, has a permanent online trail (digital footprint) and is not appropriate behaviour.
Staying safe	Recognise that some websites ask for private information and discuss how to handle these requests and where to go for help and support.	Stay safe online by choosing websites that are appropriate to visit (based on the confidence you have in the author(s) of the website) and know where to go for help and support when they have concerns about content or contact on the internet and other online technologies.	Describe simple rules for sharing images and data safely.	Identify the positive and negative influences of technology on health and the environment and how to protect themselves.	Discuss the impact that digital content can have and why it is important to discuss their use of technology with an adult.	Identify the benefits and risks of devices broadcasting the user's location and of giving personal information to different organisations.
Digital citizenship	Recognise that work they have created belongs to them.	Recognise that information put online leaves a digital footprint.	Compose clear and appropriate messages in online communities.	Identify appropriate behaviour when contributing to collaborative online projects for learning.	Cite all sources when researching and explain why sources should be provided.	Recognise that digital content can be edited online.
Physical interactions	Observe and explore outcomes when buttons are pressed in sequences on a robot and identify and debug a simple algorithm.	Plan and enter a sequence of instructions using a robot, specifying distance and angle of turn.	Design, write and enter a sequence of instructions using a robot or other device to achieve specific outcomes, debugging if necessary.	Use sensors to 'trigger' an action, such as sound or movement. Computers interact with the world using input and output devices.	Use a range of sensors to control a physical system.	Design, write and debug a program to control a physical system, which may include output devices, such as motors, lights and buzzers.



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Creation	Select appropriate software to complete given tasks using text, images, audio and video clips.	Create and edit multimedia components for a range of tasks.	Combine a range of text, images, animation and audio and video clips for given purposes.	Manipulate a range of text, images, sound or video clips and animation for given purposes.	Create, select and combine a range of texts, images, sound clips and videos for given purposes.	Select, use and combine a variety of software, including internet services, to meet a goal.
Data and computational thinking	Follow a sequence of steps to solve a problem and create instructions that others can follow (for floor robots or onscreen sprites).	Create a simple solution that tests an idea, predict the outcome and test and debug the solution to ensure that it works.	Identify and use repetitions or loops in a program sequence, predicting outcomes and noticing and correcting any mistakes.	Describe and demonstrate a simple program that contains a looping element and how part of a program may need repetition.	Design, write and debug simple sequences of instructions (algorithms), including IF, THEN and OTHERWISE commands, to decide if something is true or false.	Demonstrate how programs run in an exact order by following a sequence of instructions, and test and debug programs.
Networks	Show awareness that work they create and save on a computer or tablet can be shown to others using another device.	Recognise that computers can be linked to share resources and digital content can be stored, organised and retrieved.	Recognise that saved work can be retrieved from another device on the same network.	Recognise that the school network links computers to allow the sharing of resources.	Compare the ways in which work can be shared on a school network with the ways work is shared at home or in the wider world.	Name some of the positives and negatives of communicating with others online.
Hardware	Use a range of computing hardware for different purposes.	Use computing hardware in different ways to collect data.	Use familiar computer hardware to successfully complete a task.	Use new and unfamiliar computing hardware.	Apply computing skills using unfamiliar hardware to solve a problem successfully.	Identify how using different hardware can increase creativity and productivity.
Software	Begin to use a range of software for different purposes.	Use different types of software and identify their purposes.	Use a range of different software to successfully complete a project.	Apply computing skills to use new computing software.	Apply computing skills to create content using unfamiliar programs or apps.	Identify how a new piece of software or an app can increase creativity.
Real world	Observe how collected data can be represented electronically.	Use data handling skills to represent data digitally.	Log light level, temperature or sound level using a program or app.	Log light level, temperature or sound level using a program or app, over a period of time.	Use sensing tools or apps for an investigation and interpret the findings.	Plan data handling investigations and use the outcomes from data collection to show the findings.



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Digital world	Understand that there are online tools that can help people to create content and communicate.	Recognise some uses of the internet, in simple terms and some of its benefits and drawbacks.	Use appropriate tools (software, websites and apps) to collaborate and communicate safely online.	Exchange online communications with other learners, adding and responding to comments, such as in a blog.	Create an online collaborative project for a specific purpose, sharing documents and appropriately setting permissions for other group members.	Exchange online communications, making use of a growing range of available features and being aware of security settings.
Real world	Recognise the ways digital technology can be used in the classroom, home and community.	Recognise why digital technology is used in the classroom, home and community.	Use digital technology in different ways in the classroom, home and community.	Use digital technology in different ways in the classroom, home and community to achieve a set goal.	Select, use and combine appropriate technology to create a solution that will have an impact on others.	Combine a range of technology to achieve a particular outcome.
Digital searching	Search for or retrieve digital content, including images and information, in digital folders and online, with supervision.	Recognise and demonstrate that some information can be found online and some offline.	Explain that the World Wide Web contains lots of web pages about different subjects that can be searched.	Explain that when searching online, some web pages may contain adverts or pop-ups that encourage people to click on them.	Discern where web content might originate from and recognise that this gives clues to its authenticity, reliability and security.	Critically evaluate search engine results and identify factors that may affect ranking, such as how long the site has existed, the number of links to the site and whether the organisation has paid to have their site promoted.