

Computing Progression



Intent

Computing should enable children to understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation. Children will analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems. They will have opportunities to evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems, enabling them to become responsible, competent, confident and creative users of information and communication technology.

Implementation

Computing is taught as a discrete subject with skills being applied across the curriculum. All classes follow a rolling two-year cycle using the iCompute scheme of work as a basis for their lessons, with e-safety and programming prioritised. In Key Stage 1, pupils implement algorithms through programs on digital devices, following precise and unambiguous instructions; use technology purposefully to create, organise, store, manipulate and retrieve digital content; use technology safely and respectfully, keeping personal information private; and identify where to go for help when they have concerns. In Key Stage 2, children learn to design, write and debug programs that accomplish specific goals; understand computer networks and how they can provide multiple services; use search technologies effectively; select, use and combine a variety of software, on a range of digital devices, to design and create content that accomplishes given goals, including collecting, analysing, evaluating and presenting data and information; as well as using technology safely, respectfully and responsibly. Despite computing not being explicitly mentioned within the EYFS statutory framework, opportunities are provided for young children to use technology to solve problems and produce creative outcomes as well as to develop their ability to use computational thinking effectively, such as through undertaking projects involving the concepts and approaches suggested by iCompute's scheme of work.

Impact

The impact of teaching computing will be seen across the school with increased proficiency in safely and responsibly applying the taught skills both in discrete computing lessons and in cross-curricular work. Children will become confident at applying information technology to specific problems; demonstrate the computer science skills required to think logically to produce and adapt their own programs; and be digitally literate and able to use information technology safely in a rapidly evolving field.

Level expected at the end of EYFS Personal, Social and Emotional Development Managing Self <ul style="list-style-type: none"> Be confident to try new activities and show independence, resilience and perseverance in the face of challenge. Explain the reasons for rules, know right from wrong and try to behave accordingly. Expressive Arts and Design Creating with Materials <ul style="list-style-type: none"> Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function. 	Key Stage One National Curriculum Expectations Pupils should be taught to: <ul style="list-style-type: none"> 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. 	Key Stage Two National Curriculum Expectations Pupils should be taught to: <ul style="list-style-type: none"> 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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Computer science	<ul style="list-style-type: none"> Write/draw a set of simple instructions in order Describe patterns and relationships 	<ul style="list-style-type: none"> Read a set of instructions and predict the correct outcome Produce an accurate set of instructions using 	<ul style="list-style-type: none"> Know that programming applications can be given commands to produce specific effects on screen 	<ul style="list-style-type: none"> Produce a sequence of instructions that result in planned outcomes Program a short sequence of commands that result in a planned effect 	<ul style="list-style-type: none"> Write an algorithm to produce a given effect using repetition Accurately predict the outcomes of a range of algorithms and programs 	<ul style="list-style-type: none"> Write or amend more complex programs to create a variety of outcomes Program algorithms that achieve a range of specified outcomes Create efficient programs by designing solutions using abstraction 	<ul style="list-style-type: none"> Create and use efficient methods of iteration and nested conditional statements Systematically test computer programs for bugs and make them work as expected

	<ul style="list-style-type: none"> Sort objects according to criteria Compare data using simple charts and graphs Make comparisons between data on a graph 	<p>agreed language that others can follow</p>	<ul style="list-style-type: none"> Produce a sequence of blocks that achieves a simple effect Plan and give direct instructions to make things happen 	<ul style="list-style-type: none"> Program and test a simple program Create algorithms to solve simple problems 	<ul style="list-style-type: none"> Test, debug and refine algorithms and programs Use sequence and basic selection and repetition in computer programs Explain how a programmed effect has been achieved Talk about improvements that could be made to programs 	<ul style="list-style-type: none"> Test, debug and refine computer programs 	<ul style="list-style-type: none"> Critically analyse algorithms and programs and suggest more elegant solutions Create procedures that call on other procedures (E.G. by using 'My blocks' or broadcasting)
Information Technology	<ul style="list-style-type: none"> Play and learn with a wide range of technology 	<ul style="list-style-type: none"> Use IT to create sentences that communicate meaning Create and save their own work Be able to compare creating their work using IT with manual methods Explain why a particular tool has been chosen and its effect 	<ul style="list-style-type: none"> Navigate a document using arrow keys and a mouse Use the backspace and delete button to remove text Use tools to create simple presentations that communicate meaning Make choices about applications and tools to use for a particular purpose Locate, edit and save different versions of their work 	<ul style="list-style-type: none"> Combine graphics with text Use appropriate effects and resize graphics Copy text from an internet page to a document copy images from internet pages save, print and retrieve work use software, computers and devices to make simple presentations and create things 	<ul style="list-style-type: none"> Use the more advanced features of applications to better match their work to their audience Send an email Reply to an email Use the research facility in a database to find the answer to questions Carry out searches involving more than one condition to find answers to a variety of questions, sometimes with help 	<ul style="list-style-type: none"> Understand that digital content needs to be planned to take account of the intended audience, the content and the layout of the information Discuss the rationale behind their digital creations including content, media used and layout Develop and refine digital content for a specified audience 	<ul style="list-style-type: none"> Create digital content that incorporates images, sounds and text and is organised into pages that matches the needs of a specified audience Critically analyse digital content and makes judgements about its suitability for a specific audience
Digital Literacy	<ul style="list-style-type: none"> Talk about information found from images, text, video and sound understand that audio can convey information 	<ul style="list-style-type: none"> Access a website using a simple URL Navigate a website using hyperlinks, buttons and image links Talk about how they found information in a website Make choices about the kind of information they collect from websites Use a combination of text and drawing to make simple presentations 	<ul style="list-style-type: none"> Choose a website based on how useful it is for a specific purpose Demonstrate how they found specific information Be discerning about the information found from different websites Select appropriate applications to help them achieve a specific task Navigate a website using hyperlinks and the back button Type web address into a browser Create internet favourites Recognise similarities between storyboards of everyday activities Identify suitable information to present 	<ul style="list-style-type: none"> Enter a URL for a website with support Identify some links within web content and navigate with purpose Begin to use a range of applications on computers and devices independently Talk about how useful particular websites and/or applications have been to their work 	<ul style="list-style-type: none"> Understand that a computer network means connected computers Understand that you can use the internet for things other than web browsing Confidently enter URLs into an address bar Know that not all information available online is reliable and needs to be checked Find information by navigating around a number of websites using hyperlinks and buttons Know that not all information available online is reliable and it needs to be checked Know that internet search engines give a list of websites based on search terms 	<ul style="list-style-type: none"> Can discuss opportunities for communication and collaboration online Can use internet services other than web browsing Improve their work based on feedback and can comment on the success of their work Create digital content for specific purposes by combining software applications and internet services to communicate with an audience 	<ul style="list-style-type: none"> Understand how internet search results are ranked Understand that computers on networks have unique addresses (IP addresses) and that data is transmitted as packets Design and create webpages using HTML and CSS Design criteria for evaluating digital content Identify improvements and refine their own work and other's work

E-safety	<ul style="list-style-type: none"> • Always ask permission before going online • Seek support when unsure about digital content • Talk openly about the time they spend on computers and devices and the content they have viewed/used 	<ul style="list-style-type: none"> • Understand that a wide range of information is personal • Identify a variety of characteristics of trustworthy people and justify opinions • Know that personal information should only be given to trusted people 	<ul style="list-style-type: none"> • Identify ways to keep themselves safe when using ICT • Use ICT to communicate, identifying some of the risks and act to minimise them 	<ul style="list-style-type: none"> • Understand that a wider range of information is personal • Identify some of the ways to use computers safely • Know the need for passwords and that they should be kept safe • Follow e-safety guidelines 	<ul style="list-style-type: none"> • Cross-check information provided on one website against that provided on another • Demonstrate the use of basic safety measures when using technology and working online (E.G. logging out) • Use appropriate search criteria to find relevant information and check its usefulness • Know the need to use secure passwords and to keep them private • Use ICT to communicate and collaborate, identify some of the risks and act to minimise them • Know that not all information provided on the world wide web is correct and that it needs to be checked 	<ul style="list-style-type: none"> • Identify a range of ways they can keep themselves safe using technology and online services • Know how to report any concerns • Communicate effectively and safely online • Use search criteria efficiently, find information online and check it for accuracy and reliability 	<ul style="list-style-type: none"> • Use a variety of technologies and online tools to communicate and collaborate safely • Demonstrate responsible use of technology and online tools • Know a number of risks associated with work and leisure in a digital society and act to minimise them • Find relevant information online and critically evaluate its plausibility and usefulness
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