

Breadsall CE Primary School Curriculum

Progression of knowledge and skills for:



Computing

Intent

We offer a structured sequence of lessons, helping teachers to ensure that they have covered the skills required to meet the aims of the national curriculum. The content allows for a broad, deep understanding of computing and how it links to children's lives. It offers a range of opportunities for consolidation, challenge and variety. This allows children to apply the fundamental principles and concepts of computer science. They develop analytical problem-solving skills and learn to evaluate and apply information technology. It also enables them to become responsible, competent, confident and creative users of information technology. This progression map supports computing subject leaders in readiness for an Ofsted 'deep dive'.

Implementation

Each lesson contains revision, analysis and problem-solving. Through the sequence of lessons, we intend to inspire pupils to develop a love of the digital world, see its place in their future and give teachers confidence. Cross-curricular links are also important in supporting other areas of learning. Our lesson plans and resources help children to build on prior knowledge at the same time as introducing new skills and challenges. In KS1, the focus is on developing the use of algorithms, programming and how technology can be used safely and purposefully. In KS2, lessons still focus on algorithms, programming and coding but in a more complex way and for different purposes. Children also develop their knowledge of computer networks, internet services and the safe and purposeful use of the internet and technology. Data Handling is featured more heavily in UKS2. Skills learnt through KS1 and LKS2 are used to support data presentation. Adult guides are offered, as well as end-of-unit assessments, enabling staff to feel confident in the progression of skills and knowledge and that outcomes have been met. An example of keywords has been included, showing the progression of specific language involved in children's learning so that teachers can also assess understanding and progress through vocabulary. We suggest a specific sequence of lessons for each year group, offering structure and narrative. These are not to be used exclusively but will support teachers' planning.

Impact

Learning in computing will be enjoyed across the school. Teachers will have high expectations and quality evidence will be presented in a variety of forms. Children will use digital and technological vocabulary accurately, alongside a progression in their technical skills. They will be confident using a range of hardware and software and will produce high-quality purposeful products. Children will see the digital world as part of their world, extending beyond school, and understand that they have choices to make. They will be confident and respectful digital citizens going on to lead happy and healthy digital lives.

Computing - EYFS			
Three and Four-Year-Olds	Personal, Social and Emotional Development		Remember rules without needing an adult to remind them.
	Physical Development		Match their developing physical skills to tasks and activities in the setting.
	Understanding the World		Explore how things work.
Reception	Personal, Social and Emotional Development		- Show resilience and perseverance in the face of a challenge. - Know and talk about the different factors that support their overall health and wellbeing: -sensible amounts of 'screen time'.
	Physical Development		Develop their small motor skills so that they can use a range of tools competently, safely and confidently.
	Expressive Arts and Design		Explore, use and refine a variety of artistic effects to express their ideas and feelings.
ELG	Personal, Social and Emotional Development	Managing Self	- 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	Safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function.

Key Stage 1 National Curriculum Expectations	Key Stage 2 National Curriculum Expectations
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.	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.

Computing: Key Stage 1				
coverage	E-Safety	Programming	Data Handling / Multimedia	Technology in our Lives
	<i>Use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about material on the internet or other online technologies</i>	<i>Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions.</i> <i>Create and debug simple programs. Use logical reasoning to predict the behaviour of simple programs</i>	<i>Use technology purposefully to create, organise, store, manipulate and retrieve digital content</i>	<i>Use technology purposefully to store and retrieve digital content and recognise common uses of information technology beyond school</i>
Key Skills and Knowledge	tell an adult when something unexpected or worrying is online. agree and follow sensible e-safety rules. explain why I need to keep password and personal information private. talk about why I should go online for a short amount of time. talk about why it is important to be kind and polite online and in real life and know that not everyone is who they say they are on the internet.	give instructions to a friend (using forward, backward and turn) and physically follow the instructions. tell you the order I need to do things to make something happen and talk about this as an algorithm. program a robot or software to do a particular task. look at a friend's program and tell you what will happen. use programming software to make objects move. watch a program execute and spot where it goes wrong so that they can debug it.	talk about different ways I use technology to collect information, including a camera, microscope or sound recorder. make and save a chart or graph using the data I collect and talk about the data that is shown in the chart or graph. begin to understand a branching database. tell you what kind of information I could use to help investigate a question. use technology to organise and present ideas in different ways. use the keyboard on a device to add, delete and space text for others to read and be able to save and open files.	say why I use technology in the classroom. say why I use technology in the home and community. start to understand that other people have created the information I use. identify benefits of using technology including finding information, creating and communicating. talk about the differences between the internet and things in the physical world.

Computing: Lower Key Stage 2				
	E-Safety	Programming	Data Handling / Multimedia	Technology in our Lives
Coverage	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. 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.	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.	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
Key Skills and Knowledge	choose a secure password when using a website. talk about ways that I can help protect myself from harm online. know how to use the safety features of websites as well as reporting concerns to an adult. know that anything posted online can be seen by others. choose websites and games that are age-appropriate help friends make good choices about the time they spend online. talk about why it is important to ask a trusted adult before downloading files and games from the internet. comment positively and respectfully online.	use logical thinking to solve an open-ended problem by breaking it up into smaller parts. use an efficient procedure to simplify a program. use a sensor to detect a change which can select an action within my program. know that I need to keep testing my program while I am putting it together. use a variety of tools to create a program. recognise an error in a program and debug it. recognise that an algorithm will help me sequence more complex programs. recognise that using algorithms will also help solve problems in other learning such as maths, science and design technology.	collect data and identify where data could be inaccurate. organise data in different ways. plan, create and search a database to answer questions. use a data logger to record and share readings with friends. use photos, video and sound to create an atmosphere when presenting to different audiences. have the confidence to explore new media to extend what I can achieve. change the appearance of text to increase its effectiveness. create, modify and present documents for a particular purpose. use a keyboard confidently and make use of a spellchecker - write and review my work. give constructive feedback to friends to help them improve their work and refine my own work.	tell whether a resource I am using is on the internet, the school network or my own device. identify key words to use when searching safely on the World Wide Web. think about the reliability of information I read on the World Wide Web. know how to check who owns photos, text and clipart. create a hyperlink to a source on the World Wide Web.

Computing: Upper Key Stage 2

	E-Safety	Programming	Data Handling / Multimedia	Technology in our Lives
Coverage	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. 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.	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.	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
Key Skills and Knowledge	know to protect my password and other personal information. explain the consequences of sharing too much information about myself online. support my friends to protect themselves and make good choices online, including reporting concerns to an adult. explain the consequences of spending too much time online or on a game. explain the consequences to myself and others of not communicating kindly and respectfully. know how to protect my computer or device from harm on the internet.	deconstruct a problem into smaller steps, recognising similarities to solutions used before. explain and program each of the steps in my algorithm. evaluate the effectiveness and efficiency of my algorithm while I continually test the programming of that algorithm. recognise when I need to use a variable to achieve a required output. use a variable and operators to stop a program. use different inputs (including sensors) to control a device or onscreen action and predict what will happen. use logical reasoning to detect and correct errors in algorithms and programs.	plan the process needed to investigate the world around me and select the most effective tool to collect data for my investigation. check the data I collect for accuracy and plausibility. interpret the data I collect and present it in an appropriate way. use the skills I have developed to interrogate a database talk about audience, atmosphere and structure when planning a particular outcome. confidently identify the potential of unfamiliar technology to increase my creativity. combine a range of media, recognising the contribution of each to achieve a particular outcome. explain why I select a particular online tool for a specific purpose. be digitally discerning when evaluating the effectiveness of my work and the work of others.	explain the internet services I need to use for different purposes. describe how information is transported on the internet. select an appropriate tool to communicate and collaborate online. talk about the way search results are selected and ranked. check the reliability of a website. understand about copyright and acknowledge the sources of information that I find online.

Computing Overview KS1	Autumn	Spring	Summer
Cycle A Started 2021/2022	Data handling/Multimedia: Keyboard skills E-safety	Programming: Discovery coding Year 1 – Unit 1a & b Year 2 – Unit 2a & b E-Safety	Data handling & multimedia: Creating PowerPoints and making graphs related to topic work.
Cycle B Started 2022/2023	Multimedia/Data Handling: Using stop motion program to create a Great Fire of London animation. Technology in our lives: using ICT to create firework pictures E-Safety	Continue with keyboard skills – Animal research Programming: Discovery coding: - Year 1 – Unit 1a & b Year 2 – Unit 2a & b E-Safety	Multimedia/Data Handling: Branching databases linked to science topic Technology in our lives: Using technology to collect information related to science topic

Computing Overview LKS2	Autumn	Spring	Summer
Cycle A Started 2021/2022	Technology in our lives: Simulation programme Programming: Controlling robots/models E-Safety	Programming: Coding 3A + 3B – Year 3 Coding 4A +4B – Year 4 E-Safety	Multimedia/Data Handling: Create a presentation on Derbyshire E-Safety
Cycle B Started 2022/2023	Programming: Coding 3A + 3B – Year 3 Coding 4A +4B – Year 4 Online Safety Multimedia/Data Handling: Healthy Lunchbox leaflet Roman PowerPoint	Multimedia/Data Handling: Creating digital content. Technology in our lives Use advanced features of apps and devices to communicate ideas. E-Safety	Technology in our lives Simulation programme Programming: Controlling robots/models E-Safety

Computing Overview UKS2	Autumn	Spring	Summer
Cycle A Started 2021/2022	Programming: Coding Unit 5A & 6A Data Handling: Use data loggers to investigate light	Programming: Coding Units 5B +6B Technology in our lives: Explore devices on a computer network (Y5) Understand computer networks including the internet (Y6)	Multimedia: Stop motion animation on iPad (Y5) Create images using paint (Y6)

	Multimedia: Use software to produce a multitrack audio presentation (Y5) Multimedia: Use software to make their own short film and accompanying soundtrack. (Y6) E Safety: Strong passwords (Y5)/Talking safely online (Y6) & Digital Citizens	Multimedia: Year 5 – PowerPoint linked to current topic Year 6 – Use publisher to create a brochure linked to the topic E Safety: Privacy Rules / Internet Safety Day	Data handling: Use Microsoft excel to carry out complex search of databases (Y5) Use formulae within a spreadsheet (Y6) Programming: Coding (Scratch Y6) E Safety: How to cite a site (Y5). What is cyber bullying? (Y6) Picture perfect (Y5) Selling Stereotypes (Y6)
Cycle B Started 2022/2023	Programming: Coding Unit 5A & 6A Data Handling: Use data loggers to investigate materials Multimedia: Use software to produce a multitrack audio presentation (Y5) Multimedia: Use software to make their own short film and accompanying soundtrack. (Y6) E Safety: Strong passwords (Y5)/Talking safely online (Y6) & Digital Citizens (Y5 & 6)	Programming: Coding Units 5B +6B Technology in our lives: Explore devices on a computer network (Y5) Understand computer networks including the internet (Y6) Multimedia: Year 5 – PowerPoint linked to current topic Year 6 – Use publisher to create a brochure linked to the topic E Safety: Privacy Rules / Internet Safety Day	Multimedia: Stop motion animation on iPad (Y5) Create images using paint (Y6) Data handling: Use Microsoft excel to carry out complex search of databases (Y5) Use formulae within a spreadsheet (Y6) Programming: Coding (Scratch Y6) E Safety: How to cite a site (Y5). What is cyber bullying? (Y6) Picture perfect (Y5) Selling Stereotypes (Y6)