Computing Knowledge Progression

EYFS: Please refer to EYFS Progression Documents for:

- **Personal, Social and Emotional Development**
- **Physical Development**
- **Understanding the World**
- **Expressive Arts and Design**

National curriculum purpose of study:

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 and are 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.

National curriculum aims: The national curriculum for computing aims to ensure that all pupils:

- 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

School intent:

At Bracebridge Infant and Nursery School it is our intent that through our Computing Curriculum, children will be able to develop a wide range of fundamental skills, knowledge and understanding that will equip them for the rest of their life. With technology playing such a significant role in society today, we believe 'Computational thinking' is a skill children must be taught if they are to be able to participate effectively and safely in this digital world. With the support of the 2 Simple Purple Mash software and NCCE, we aim to equip children with the skills to create their own digital content in a range of purposeful contexts. A skills-based approach will ensure that children are able to apply their knowledge to a range of technology, whilst remaining safe online

Knowledge	Nursery	Reception	Year 1	Year 2	Year 3
Online Safety **KS1 NC objectives:** Use technology safely and online technologies. respectfully, keeping	Pupils will know how to: • remember rules without needing an adult to remind them • ask an adult when they want to use the internet	Pupils will know how to: • know and talk about the different factors that support their overall health and wellbeing – sensible amounts of 'screen time'.	Pupils will know how to: • log in safely. • find saved work in the Online Work area and find teacher comments.	Pupils will know how to: • refine searches using the Search tool. • use digital technology to share work on Purple Mash to	Pupils will know how to: • identify what makes a safe password. • manage methods for keeping passwords safe. • understand

personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other	• talk about how to be careful with technology devices • talk about the amount of time they spend on devices	• recognise when they are on the internet • talk about how to be careful with technology devices • use Purple Mash and other resources with support to help them in their learning. • **explain the reason for rules, know right from wrong and try to behave accordingly**	• search Purple Mash to find resources. • become familiar with the icons and types of resources available in the Topics section. • add pictures and text to work. • explore the Tools and Games section of Purple Mash • open, save and print. •understand the importance of logging out	communicate and connect with others locally. • show some knowledge and understanding about sharing more globally on the Internet. • introduce Email as a communication tool using simulations. • understand how we should talk to others in an online situation. To open and send simple online communications in the form of email. • understand that information put online leaves a digital footprint or trail. • identify the steps that can be taken to keep personal data and hardware secure. • understand the risks of cyberbullying and its consequences.	how the Internet can be used in effective communication. • understand how a blog can be used to communicate with a wider audience. • consider the truth of the content of websites. • learn about the meaning of age restrictions symbols on digital media and devices.
Vocabulary **New vocab** **Revision**	On, off, internet, safe, rules	On, off, internet, safe, rules Mouse, computer, screen, safety, technology, objects Log in, username, password, avatar, my work, log out, save, notification, topics, tools	Mouse, computer, screen, safety, technology, objects Log in, username, password, avatar, my work, log out, save, notification, topics, tools, Search, display board, internet, sharing, email, attachment, digital footprint	Log in, username, password, avatar, my work, log out, save, notification, topics, tools, Search, display board, internet, sharing, email, attachment, digital footprint password, internet, blog, concept map, username, webpage, website	Search, display board, internet, sharing, email, attachment, digital footprint, password, internet, blog, concept map, username, webpage, website
Computer Science **KS1 NC Objectives:** 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	Pupils will know how to: • make a floor robot move	Pupils will know how to: • use simple software to make something happen • make choices about the buttons or icon they press, touch or click on (Beebots)	Pupils will know how to: • understand what coding means. • use design mode to set up a scene. • add characters. • use code blocks to make the character perform actions. • use collision detection. • save and share work. • save, print, open and new icon • emphasise the importance of following instruction • complete tasks without complete instructions. • follow and create simple instructions on the computer.	Pupils will know how to: • recognise what an algorithm is. • design algorithms and then code them. • compare different object types. • use the repeat command. • use the timer command. • recognise what debugging is and debug programs	Pupils will know how to: • design algorithms using flowcharts. • design an algorithm that represents a physical system and code this representation. • use selection in coding with the 'if' command. • understand and use variables • deepen understanding of the difference between timers and repeat commands.

Use logical reasoning to predict the behaviour of simple programs			• consider how the order of instructions affects the result • understand the function of direction keys • use direction keys to complete challenges • create and debug a set of instructions • change and extend the algorithm list • set challenges for each other •provide opportunities for the teacher to set new challenges for all to try •predict the outcome of a command on a device •start a sequence from the same place		
Vocabulary **New vocab** **Revision**	Beebots, floor robot, move	Beebots, floor robot, move, software, choice, instruction	Software, choice, instruction ,action, background, button, character, coding, programs, stop, command, sound, instruction	Action, background, button, character, coding, programs, stop, command, sound, instruction algorithm, bug, character, command, debug, design, input, object, properties, repeat, scale, timer	algorithm, bug, character, command, debug, design, input, object, properties, repeat, scale, timer, computer stimulation, input, output, computer simulation
Information Technology- Uses **KS1 NC objectives:** Recognise common uses of information technology beyond school	Pupils will know how to: • explore how things work	Pupils will know how to: • independently operate simple equipment. • help adults operate equipment around the school. • identity use of technology in the classroom and at home • hold a mouse with control • use a website selected by an adult to play and learn	Pupils will know how to: • identify how technology is used in the classroom, at home and in local area. • explore simple information sources including age appropriate websites • understand the benefits of using technology	Pupils will know how to: • identify how technology is used around the world and how people communicate using technology. • understand the purpose of an email • use search engine to find images	Pupils will know how to: • carry out simple searches to retrieve digital content • use simple secure search engines • use technology for different purposes and how this impacts globally • use and combine a variety of software and digit devices to create programs
	Equipment, website	Equipment, website, mouse, IT	Mouse, IT, equipment, website, technology, classroom, home, computer	Mouse, IT, equipment, website, technology, classroom, home, computer, purpose, email, search engine, images,	purpose, email, search engine, images, global, world wide web, filters, search engine, website address, blocking
Information Technology- Software **KS1 NC objectives:** Use technology purposefully to create,	Pupils will know how to: • match their developing skills to tasks and activities in the setting •share e-books on a class display board	Pupils will know how to: • develop their small motor skills so that they can use a range of tools competently, safely and confidently •control a computer mouse	•understand that data can be represented in picture format •contribute to a class pictogram. •use a pictogram to record the results of an experiment	•make music digitally using 2Sequence •explore, edit and combine sounds using 2Sequence. •edit and refine composed music.	DEPENDENT ON THE SOFTWARE UNITS CHOSEN

organise, store, manipulate and retrieve digital content		•create a sequence of sounds on 2explore • explore, use and refine a variety of artistic effects to express their ideas and feelings • **safely use and explore a variety of materials, tools and techniques, experimenting with colour, design, texture, form and function**	•introduce e-books and the 2Create a Story tool. •add animation to a story. •add sound to a story, including voice recording and music the children have composed. •work on a more complex story, including adding backgrounds and copying and pasting pages.	•think about how music can be used to express feelings and create tunes which depict feelings. •upload a sound from a bank of sounds into the Sounds section. •record and upload environmental sounds into Purple Mash •use 2Calculate image, lock, move cell, speak and count tools to make a counting machine. •learn how to copy and paste in 2Calculate. •use the totalling tools. • use a spreadsheet for money calculations •use the 2Calculate equals tool to check calculations. •collect data and produce a graph •learn the functions of the 2Paint a Picture tool. • learn about and recreate the Impressionist style of art (Monet, Degas, Renoir). •recreate Pointillist art and look at the work of pointillist artists such as Seurat. •learn about the work of Piet Mondrian and recreate the style using the lines template.	
Vocabulary (revision) (new vocab)	See, talk about	See, talk about, pictogram, data, screen, sequence, effects	Pictogram, data, screen, see, talk about, sequence, effects, collate, data, pictogram, arrow keys, backspace, cursor, columns, cells, clipart, image tool, lock tool, move cell tool, spreadsheet	Collate, data, pictogram, arrow keys, backspace, cursor, columns, cells, clipart, image tool, lock tool, move cell tool, spreadsheet, copy and paste, rows, speak tool, binary, avatar, database, collate, Bmp, digitally, soundtrack, temp, volume, digitally, share	copy and paste, rows, speak tool, binary, pictogram, avatar, database, collate branching database, question, graphing, axis
	Impact: (How will we know what the children have learnt?) Children's achievements will be celebrated through regular opportunities, such as Open Evenings, themed weeks and visitors such as Online Safety and NSPCC including assemblies. Some work will be displayed around the school and in children's Learning journeys will demonstrate children's progression in skills and their achievements in the computing curriculum. Children will be encouraged to apply their skills across the curriculum and use ICT to support their learning in a variety of purposeful contexts. The biggest impact we want on our children is that they understand the consequences of using the internet and that they are also aware of how to keep themselves safe online.				