Computing Curriculum

The aims and intention of Computing

At Brewster Avenue Infant and Nursery School, we believe that all children need to have a high standard of computing skills if they are to succeed throughout their education. It is our intention that our children will be able to use their computing skills across the curriculum and to move forward with the skills and knowledge necessary to be active participants in today's, and our future digital world.

Our Computing curriculum is designed to support children's creativity and cross curricular learning to engage children and enrich their experiences in school. At Brewster Avenue we will focus on a progression of skills in digital literacy, computer science, information technology and online safety to ensure that children become competent in safely using, as well as understanding, technology. These strands are revisited repeatedly through a range of themes during children's time in school to ensure the learning is embedded and skills are successfully developed.

The implementation of Computing and how it is taught

Our whole school creative curriculum is shaped by our school vision. We teach the National Curriculum, supported by a clear skills and knowledge progression. This ensures that skills and knowledge are built on year by year and sequenced appropriately to maximise learning for all children. To ensure a broad range of skills and understanding, computing is taught across three main strands: digital literacy, computer science and information technology.

Digital literacy is about the safe and responsible use of technology. Children will develop practical skills and learn how to apply these to solving relevant, worthwhile problems for example understanding safe use of internet.

Information technology is about the use of computers for functional purposes, such as collecting and presenting information, or using search technology. Children will learn to use and express themselves as well as develop their ideas through technology, for example writing and presenting as well as exploring art and design using multimedia.

Computer science will introduce children of all ages to understanding how computers and networks work. It will give all children the opportunity to learn basic computer programming, from simple remote-controlled devices in nursery to on screen coding programs, such as Scratch Jr in Year 2.

We will include regular teaching of e-safety as well as participating in Safer Internet day. This ensures that children feel confident when using computers and the Internet, and know what to do if they come across something either inappropriate or uncomfortable.

The impact of Computing and how it prepares children for their next stage of education

By the end of each academic year, the majority of pupils will have learnt to use and manipulate computing skills, hardware and software appropriate for their age and stage of education. Pupils' understanding of computing progresses quickly through each year and the children gain a confident understanding of how to keep safe when using the internet, digital devices and software. The teaching and learning of Computing at Brewster Avenue will prepare our children for the next steps of their digital education and continue to enhance learning across the curriculum.

Nursery		
Digital Literacy/Online Safety	**Information Technology**	**Computer Science**
• **PSED: Talk about their feelings using words like 'happy', 'sad', 'angry' or 'worried'.** • **Lit: Engage in extended conversations about stories, learning new vocabulary.** Looking at e-safety stories, how do these events make them feel? Can the children use the vocabulary from the stories they have heard when talking about using the internet?	• **Maths: Develop fast recognition of up to 3 objects, without having to count them individually ('subitising').** • **UTW: Know that there are different countries in the world and talk about the differences they have experienced or seen in photos.** Use the internet to count objects they can see, such as number games, or objects on a screen in photographs. Use the internet to search and explore, such as maps and images from different countries.	• **CLL: Understand a question or instruction that has two parts, such as: "Get your coat and wait at the door".** • **Maths: Discuss routes and locations, using words like 'in front of' and 'behind'.** • **UTW: Explore how things work.** Explore technological toys and discuss how they work. Use the remote-controlled devices and follow instructions to help reach a destination. Can the children use positional language to describe the journey their remote-controlled devices have travelled
Key words	Safe, instruction, internet, safety, image	

Reception		
Digital Literacy/Online Safety	**Information Technology**	**Computer Science**
• **CLL: Learn new vocabulary.** • **UTW: Name and describe people who are familiar to them.** When reading e-safety stories talk about safety and sharing of personal information. Talk about who might be a safe person to talk to if they are worried about what might be happening when they use the internet.	• **CLL: Use new vocabulary through the day.** • **PD: Develop their small motor skills so that they can use a range of tools competently, safely and confidently.** • **EAD: Create collaboratively, sharing ideas, resources and skills.** Can the children name parts of the laptop, such as screen, keyboard, mousepad etc. Can the children use a keyboard and mousepad confidently when using the laptops? Provide opportunities for the children to work together and share skills.	• **CLL: Use talk to help work out problems and organise thinking and activities, and to explain how things work and why they might happen.** • **PSED: Show resilience and perseverance in the face of challenge.** Talk to each other when using their code-a-pillar. How can they make it travel in the direction that they want it to? Can they make predictions about the program they have coded? Can they change their program to enable them to succeed?
Key words	Program, code, screen, keyboard, keys, mousepad, icons, left, right, button, click	

Key Stage 1 National Curriculum 2014 - *Computing*

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 – 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

Computer Science
Information Technology
Digital Literacy

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

Term – KS1	Definition (or resource)
Algorithms	A set of instructions
Debug	Look for your mistakes and change them
Implemented	To do something/to carry out
Programs	Software that controls the operations of a computer
Unambiguous	Clear and precise
Digital devices • Input devices include keyboards, mice, and scanners. • Output devices such as printers and speakers.	An electronic device (EG, desktop computers, laptops, mobile phone, tablet, e-readers, storage devices, such as flash drives) that can receive, store, process or send digital information
Logical reasoning	One of the fundamental skills of effective thinking. It works by raising questions such as, • If this is true, what else ***must*** be true? • If this is true, what else is ***probably*** true? • If this ***isn't*** true, what else ***can't*** be true?
Manipulate	A modification to text, images, sounds, video etc.

Year 1		
Digital Literacy/Online Safety	**Information Technology**	**Computer Science**
Technology around us • I can identify rules to keep us safe and healthy when we are using technology in and beyond the home • I can give examples of some of these rules **Digital writing** • I can write a message on a computer and on paper • I can compare using a computer with using a pencil and paper	**Technology around us** • I can explain technology as something that helps us and locate examples of technology in the classroom • I can name the main parts of a computer • I can switch on and log into a computer • I can use a mouse to click and drag, make objects on a screen, create a picture and open a program • I can save my work into my file and open documents to edit. • I can tell you that writing on a computer is called typing and type my name. • I can use the arrow keys to move the cursor **Digital Painting** • I can use the paint tools to draw a picture • I can make marks on a screen and explain which tools I used • I can use the shape and line tools to recreate the work of an artist • I can create a picture in the style of an artist • I can make appropriate shape, brush size and colour choices **Grouping Data** • I can choose how to group objects • I can record how many objects are in a group • I can compare groups of objects • I can decide how to group objects to answer a question • I can record and share what I have found **Digital Writing** • I can identify and find keys on a keyboard • I can enter text into a computer • I can use backspace to remove text • I can use letter, number, and space keys • I can identify the toolbar and use bold, italic, and underline • I can type capital letters • I can change the font • I can select a word by double-clicking • I can select all of the text by clicking and dragging	**Moving a Bee-bot/Robot** • I can follow an instruction • I can give directions • I can predict the outcome of a command on a device • I can predict the outcome of a sequence involving forwards and backwards commands • I can experiment with turn and move commands to move a robot • I can predict the outcome of a sequence involving up to four commands • I can choose the order of commands in a sequence • I can debug my program • I can explain what my program should do
Key words	Rules, e-safety, files, drag, document, typing, grouping, capitals, lower case, caps lock, font, style, double-click, robot, directions, sequence, commands, order, debug	

Year 2		
Digital Literacy/Online Safety	**Information Technology**	**Computer Science**
Information technology around us • I can demonstrate how information technology is used in a shop • I can explain how information technology helps people • I can list different uses of information technology • I can recognise how to use information technology responsibly • I can say how those rules/guides can help me • I can explain simple guidance for using information technology in different environments and settings • I can identify the choices that I make when using information technology **Digital photography** • I can capture digital photos and talk about my experience • I can talk about how to take a photograph • I can recognise that images can be changed • I can identify which images are real and which have been changed • I can recognise which images have been changed **Pictograms** • I can give simple examples of why information should not be shared • I can share what I have found out using a computer • I can use a computer program to present information in different ways	**Information technology around us** • I can describe some uses of computers and some examples of computers • I can explain the purpose of information technology in the home • I can open files, move and resize images • I can compare types of information technology, find examples and talk about uses of IT. **Digital photography** • I can take photos in both landscape and portrait format • I can discuss how to take a good photograph • I can focus on an object • I can explore the effect that light has on a photo **Pictograms** • I can enter data onto a computer • I can use a computer to view data in a different format • I can use pictograms to answer simple questions about objects • I can explain what the pictogram shows • I can use a tally chart to create a pictogram • I can create a pictogram and draw conclusions from it **Making Music** • I can connect images with sounds • I can relate an idea to a piece of music • I can use a computer to experiment with pitch and duration • I can use a computer to create a musical pattern using three notes	**Robot algorithms** • I can follow instructions given by someone else • I can give clear and unambiguous instructions • I can use an algorithm to program a sequence • I can compare my prediction to the program outcome • I can follow a sequence and predict the outcome of a sequence • I can test and debug each part of the program • I can plan algorithms for different parts of a task **Programming animations (scratch jr)** • I can find which commands move a sprite • I can use commands to move a sprite • I can run my program • I can use a start block in a program • I can use more than one block by joining them together • I can change the value • I can find blocks which have numbers • I can say what happens when I change a value • I can add blocks to each of my sprite • I can delete a sprite • I can show that a project can include more than one sprite • I can create an algorithm for each sprite • I can decide how each sprite will move • I can add programming blocks based on my algorithm • I can test the programs I have created • I can use sprites which match my design
Key words	Information technology, digital devices, resize, manipulate, landscape, portrait, light, data, format, pictogram, tally, pitch, duration, pattern, unambiguous, sprite, blocks, value, logical reasoning	