Banks Lane Infant & Nursery
Computing Curriculum

Intention

Computing capability is an essential skill for life and enables learners to participate more readily in a rapidly changing world. Using the internet gives us quick access to information on any subject as well as ideas and experiences from a wide range of people, communities and cultures.

Collaboration | Effort |Excellence | Respect
And that we can make a difference

Progression from EYFS to KS1

End points: ***By the end of EYFS,*** children will: Know some directional language and use it correctly. They will begin to develop their communication and collaboration skills and organise their thinking in order to problem solve. They will also be able to talk about what to do if we see something online which worries us. ***By the end of KS1*:** Previous learning will be built upon further as children develop their ability to problem solve and apply that through programming and debugging. They will be able to use technology safely and respectfully, keeping personal information private. They will be able to identify where to go for help and support when they have concerns about content or contact when using technology.

Computing Experiences & Opportunities (Cultural Capital)

Safer Internet Day
Altru Drama workshops – E-Safety drama workshops for KS1
Seesaw – used for EYFS observations, BLIS experiences and awards, home learning and communication between home and school.

Knowledge in Computing

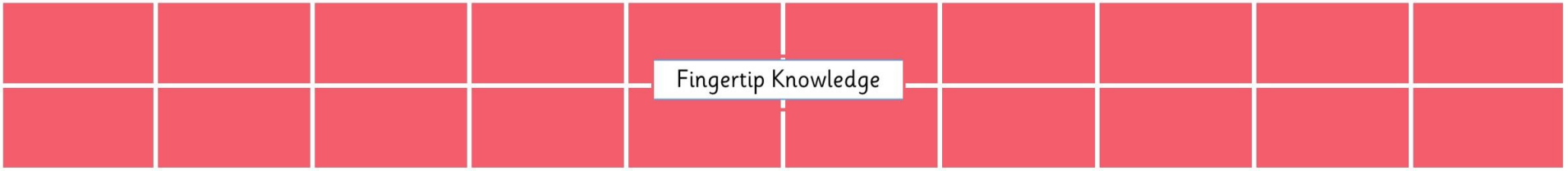
Our Computing curriculum precisely follows the units outlined in the National Curriculum. It is our intention that through studying Computing, pupils become more expert as they progress through the curriculum, accumulating, connecting and making sense of the rich substantive and disciplinary knowledge.

Substantive Concepts are concepts concerned with the subject matter of Computing, such as machines, programming, problem solving, creating media, data and information, safety and security and impact of technology. They are embedded throughout the curriculum so that each one is planned to be encountered multiple times. Substantive concepts are best understood with repeated encounters in specific, meaningful contexts, rather than being taught in an abstract way.

- Creating media — Select and create a range of media including text, images, sounds, and video
- Data and information — Understand how data is stored, organised, and used to represent real-world artefacts and scenarios
- Problem Solving — Working step-by-step to understand a problem and develop a solution
- Impact of technology — Understand how individuals, systems, and society as a whole interact with computer systems
- Machines — Understand what a computer is, and how its constituent parts function together as a whole
- Programming — Create software to allow computers to solve problems. Be able to comprehend, design, create, and evaluate algorithms
- Safety and security — Understand risks when using technology, and how to protect individuals and systems

Fingertip knowledge is the knowledge of the key facts and information which pupils need in their minds, or at their fingertips, whilst undertaking Computing sessions. Fingertip knowledge must be taught and pupils must retain it during the session. However, gaining this type of knowledge is not the ultimate long term aim of the primary classroom, and it may not be needed beyond the current topic.

Disciplinary knowledge Disciplinary knowledge – this is knowing how to collect, use, interpret, understand and evaluate learning through the Computing knowledge that is taught. The cumulative nature of the curriculum is made memorable by the implementation of retrieval, word building and deliberate practice tasks. This powerful interrelationship between structure and research-led practice is designed to increase substantive knowledge and accelerate learning within and between study modules. That means the foundational knowledge of the curriculum is positioned to ease the load on the working memory: new content is connected to prior learning. The effect of this cumulative model supports opportunities for children to associate and connect significant computing concepts, over time, and with increasing expertise and knowledge.



Machines

Programming

Problem solving

Creating Media

Data and Information

Safety and Security

Impact of Technology

Substantive Concepts

BLIS Big Ideas

- Information Technology
- Digital Literacy
- Computer Science

Disciplinary Knowledge

EYFS

- Problem solving and organising thinking
- Creating content for different purposes
- Making connections and using algorithms
- Keeping ourselves safe

KS1

- Problem solving and organising thinking
- Creating content for different purposes
- Making connections and using algorithms
- Keeping ourselves safe

KS2

- Problem solving and organising thinking
- Creating content for different purposes
- Making connections and using algorithms
- Keeping ourselves safe

EY Overview of Progression		
Educational Programme-EYFS Framework		
As young children take part in a variety of tasks with digital devices, such as moving a Bee Bot around the classroom, they will already be familiar with the device before being asked to undertake related to the Key Stage One Computing curriculum, such as writing and testing a simple program. Not only will children be keen again to use a device that they had previously enjoyed using, their cognitive load will also be reduced, meaning they are more likely to succeed when undertaking activities linked to the next stage in their learning. **Within the revised EYFS statutory framework, there are opportunities within each area of the framework to enable practitioners to effectively prepare children for studying the Computing curriculum.**		
Nursery Development Matters	**Reception Development Matters**	**Early Learning Goals**
• Uses a wider range of vocabulary. • Be able to express a point of view and to debate when they disagree with an adult or a friend, using words as well as actions. • Select and use activities and resources, with help when needed.	• Learn new vocabulary • Describe a familiar route. • Discuss routes and locations, using words like 'in front of and 'behind'. • Use talk to help work out problems and organise thinking and activities, and to explain how things work and why they might happen. • Draw information from a simple map.	• Make comments about what they have heard and ask questions to clarify their understanding. • Offer explanations for why things might happen, making use of recently introduced vocabulary

Big Ideas (Key Concepts)			
	EYFS	**KS1**	**KS2 (what we are preparing our children for)**
Information Technology Including **Programming**, **Data and Information**	• Draw information from a simple map. • Describe a familiar route. • Discuss routes and locations, using words like 'in front of and 'behind'.	• Writing short algorithms and programs for floor robots and predicting program outcomes • Creating and debugging programs and using logical reasoning to make predictions • Exploring object labels, then using them to sort and group objects by properties • Collecting data in tally charts and using attributes to organise and present data on a computer • Designing and programming the movement of a character on screen to tell stories • Designing algorithms and programs that use events to trigger sequences of code to make an interactive quiz	• Creating sequences in a block-based programming language to make music • Using a text-based programming language to explore count-controlled loops when drawing shapes • Building and using branching databases to group objects using yes/no questions • Recognising how and why data is collected over time, before using data loggers to carry out an investigation • Using a block-based programming language to explore count-controlled and infinite loops when creating a game.
Digital Literacy Including **Problem Solving, Creating Media, Safety and Security**	• Use talk to help work out problems and organise thinking and activities, and to explain how things work and why they might happen. • Uses a wider range of vocabulary.	• Choosing appropriate tools in a program to create art and make comparisons with working non-digitally • Capturing and changing digital photographs for different purposes • Knowing how the internet/technology can be used to communicate. • Understanding the importance of asking	• Capturing and editing digital and still images to produce a stop-frame animation that tells a story • Capturing and editing audio to produce a podcast, ensuring that copyright is considered • Creating documents by modifying text, images and page layouts for a specified

		permission to be online. • Knowing rules that keep us safe and healthy when using technology. • Identifying personal information and what trusted people to share this with.	purpose
Computer Science Including **Machines and Impact of Technology**	• Describe a familiar route. • Discuss routes and locations, using words like 'in front of and 'behind' • Learn new vocabulary	• Recognising technology in school and using it responsibly • Identifying IT and how its responsible use improves our world in school and beyond • Using a computer as a tool to explore rhythms and melodies, before creating a musical composition	• Identifying that digital devices have inputs, processes and outputs and how devices can be made to connect networks • Recognising the internet as a network of networks including the WWW

Disciplinary Knowledge:			
	EYFS	**KS1**	**KS2**
Problem solving and organising thinking	• Use talk to help work out problems and organise thinking and activities, and to explain how things work and why they might happen.	• Use a wide vocabulary of everyday historical terms. • Use logical reasoning to predict the behaviour of simple programs	• Use logical reasoning to explain how some simple algorithms work, and to detect and correct errors in algorithms and programs
Creating content for different purposes	• Select and use activities and resources, with help when needed. • Uses a wider range of vocabulary.	• Use technology purposefully to create, organise, store, manipulate and retrieve digital content	• Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems. Solving problems by decomposing them into smaller parts
Making connections and using algorithms	• Describe a familiar route. • Discuss routes and locations, using words like 'in front of and 'behind'.	• 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 • Recognise common uses of information technology beyond school	• Select, use and combine a variety of software on a range of digital devices to design and create a range of programs, systems and content that accomplish goals, including collecting, analysing, evaluating and presenting data and information

Keeping ourselves safe	• Begin to use the internet to find things out, with support • Recognise simple examples of personal information and trusted people • Recognise it's ok to say no to someone who asks me to do something I don't want to do • Recognise some ways the internet can be used to communicate • Understand a list of rules to help keep us safe when using technology	• Know some rules that keep us safe and healthy when using technology. • Recognising that people online can make me feel sad, embarrassed or upset. • I know I can say 'no', 'I'll tell' or 'I'll ask'. • I know when to speak to an adult. • Using the internet with adult support to communicate with people I know. • Being respectful and understanding things can be understood differently online by different people. • Understanding different ways to put information online and knowing to ask permission first. • Understanding that some things I see online may be untrue. • How to get help from a trusted adult when uncomfortable. • Identifying personal information and what trusted people to share this with. • Knowing to ask a trusted adult before sharing information. • Understanding passwords. • Understanding that work I created belongs to me and knowing how to name my work suitably.	• Use technology safely, respectfully and responsibly. To recognise acceptable and unacceptable behaviour and to identify a range of ways to report concerns about content and contact

Key Substantive Concepts: Machines Programming Problem Solving Creating Media Data and Information Safety and Security Impact of Technology			
Fingertip Knowledge	EYFS	Year 1	Year 2
Machines	• How to turn on the hardware, specific to the classroom	• Talk about which Technology we have at home	• Talk about which Technology we have at home
Programming			
Problem Solving			
Creating Media			
Data and Information			
Safety and Security	• To talk about which games we play online at home	• To talk about which games we play online at home	• To talk about which games we play online at home

Banks Lane Infant & Nursery School | Year 1 Computing Assessment

Year 1 Key Concepts	**Information Technology** Including **Programming**, **Data and Information**					**Digital Literacy** Including **Problem Solving, Creating Media, Safety and Security**					**Computer Science** Including **Machines and Impact of Technology**			
Name	I can add and remove text on a computer	I can edit text e.g. font, colour, style	I can label, compare and group objects.	I can use my algorithm to create a program	I can combine four direction commands to make a sequence	I can describe what different tools do	I can choose a command for a given purpose	I can use a program to create a picture	I understand not to share information online with unknown people	I know to tell an adult if something online makes me feel uncomfortable	I can identify technology	I can identify a computer and its main parts	I can use a mouse in different ways	I can use a keyboard to type and edit text

Banks Lane Infant & Nursery School | Year 2 Computing Assessment

Year 2 Key Concepts	**Information Technology** Including **Programming**, **Data and Information**					**Digital Literacy** Including **Problem Solving, Creating Media, Safety and Security**					**Computer Science** Including **Machines and Impact of Technology**			
Name	I can recognise that we can count and compare objects using tally charts	I can create a pictogram	I can select objects by attribute and make comparisons	I can explain what happens when we change the order of instructions	I can design an algorithm	I can use a digital device to take a photograph and use tools to edit and improve.	I can create and record music and use tools to edit to create a final piece.	I can use a camera to film and create a film	I can use logical reasoning to predict the outcome of a program (series of commands)	I can create and debug a program that I have written	I can identify IT beyond school	I can abide by the school e-safety rules and explain why they are important	I know to tell an adult if something online makes me feel uncomfortable	I keep personal information private