

**Intent:**

We would like our children to be confident in exploring technology, and to be equipped in becoming active participants in the digital world. We want the children to appreciate how technology impacts their learning and understand how to stay safe and responsible online. Our computing curriculum is designed to provide children with a good understanding of how simple technology works while building their computational thinking skills through a well-established scheme. Each year group will follow the progression of skills to ensure clear steps in learning, the teachers will plan for technology to be used in a range of lessons to give children the opportunity to use their skills in different contexts. We teach our children how to problem solve, programme, think logically and create content and value the importance of e-safety.

As a school we recognise the role that families have in supporting children's understanding of e-safety and encourage families to know the importance of this.

**Disadvantaged/SEND children will access technology and lessons around computing in a way that is appropriate to the individual, teachers will respond and adapt lessons according to what the children need in order to achieve. We ensure children are provided with the appropriate resources to support them with their development.**

**Implementation:**

We acknowledge that our children in the local community have varying experiences with technology in their home life.

Planning for computing is guided by the threads of learning, taken from Teach Computing scheme, as well as the National Curriculum/Early Years curriculum. Teachers access these documents to plan sequential learning so that knowledge and skills are built upon as the children move through school. We aim to revisit learning to ensure the children have opportunity to embed and apply their knowledge and skills. Technology is used every day in school, across the majority of subjects which means children have numerous opportunities to see and experience technology in different subjects.

In Foundation stage computing is accessed through continuous provision and through adult led activities. Children have access to the interactive whiteboards, Robot mice, cause and effect toys, making and playing games and laptops. However, we also acknowledge that in order for our children to become successful in computing, there are other areas of learning which make a significant impact to their development such as, children's communication, literacy and numeracy. An example of this is knowing how to listen and follow a 2 step instruction as this is a fundamental skill needed to be able to programme.

Key stage 1 builds upon the skills and knowledge learnt in Foundation stage. We teach the direct skills in units and the children have the opportunity to revisit the skills in other curriculum areas to embed the knowledge learnt. Key stage 1 have access to laptops and some Ipads, as well as the coded robot mice.

E-safety is taught and revisited frequently throughout the year and children take part in e-safety days and assemblies. To engage the parents with e-safety we communicate through Class Dojo, newsletters, website information and regularly share the assemblies we have shared with the children.

**Disadvantaged/SEND - Teachers incorporate the use of technology to support specific needs such as iPad's for communication, laptops to support fine motor control, CCTV monitor (visualiser) for children with visual impairment and appropriate sensory stimuli to engage the children effectively. Teachers also support children by adapting lesson plans to ensure all children have the opportunity to access.**

**Impact:**

## Banks Road Infant and Nursery School

Children will know how to explore technology and understand how to use it effectively, efficiently and safely. Children's knowledge and skills will be built upon each year in school. Children will feel prepared to become active participants in the world beyond them and in their future. The children will feel confident in using technology to enhance and support their own learning, they will understand that when used correctly and safely, technology can be a great aid in becoming more independent with their learning and it can be used across all of the curriculum areas as a means of recording work, researching work and showcasing work.

The children will have developed a good understanding of e-safety including how to recognise risks, who to ask for help, how to minimise risks online in the first place.

**Disadvantaged/SEND-** Children will enjoy using technology and will use it to support their learning and for those with specific needs, technology allows them to feel included in the classroom learning. Children and parents recognise the positive impact that technology has on the learning experience.

### Substantive and disciplinary knowledge

**Substantive knowledge** in computing is based on the knowledge of four key areas: Computing systems and networks, Creating media, Programming and Data/Information. Each of these areas are explicitly taught from Nursery to Year 2. Each child will arrive to school with varying levels of exposure and experience with technology, there are times we can challenge and support children who are more confident, but we aim to teach the children sequentially, building on knowledge to ensure there are no gaps in their learning.

**Disciplinary knowledge** in computing is the process of enabling children to use their substantive knowledge to become computational thinkers. The children will know the facts of computers and technology (substantive) and will use this to access technology, create, explore for its intended purpose.

**Procedural Knowledge** in computing is the skills and processes needed to perform a task using technology e.g. knowing how and why we move the cursor and clicking to select a function. It is knowing how to perform a task.

**Vocabulary** is crucial to academic success for our children. Tier 3 vocabulary is mapped out throughout our curriculum in order to ensure progression and ambition.

The understanding of knowledge has been carefully sequenced to build year-on-year. This is clearly outlined in our **progression of knowledge and threads of learning planning**.

Our **Sticky Knowledge** for computing outlines the key knowledge that we want our children to know and remember from each unit of work. This incorporates key vocabulary, knowledge, key questions and considerations. **Retrieval** is built into every lesson and **spaced retrieval** each term using the learning wall and sticky knowledge/floor books.

In **EYFS**, the children have daily access to a variety of media and hardware which they are free to explore and use during continuous provision. This includes access to old mobiles/telephones, old laptops to explore the keys, cause and effect toys, coded mice, torches and the interactive whiteboard. Explicit teaching of computing is also carefully planned into lessons throughout the year – as computing effectively incorporates lots of other areas of learning such as literacy, communication and maths, these areas are also carefully considered so that the children can succeed with their computing targets.

**Component Plan EYFS**

|             | <b>Term 1</b>                                                                                     | <b>Term 2</b>                                                                                                                                | <b>Term 3</b>                                                                                                                                  | <b>Term 4</b>                                                                                | <b>Term 5</b>                                                                                 | <b>Term 6</b>                                                                                                                                                |
|-------------|---------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>EYFS</b> | <p>Technology around us</p> <p>Exploring torches, IWB, mechanical toys, laptops in provision.</p> | <p>Creating media</p> <p>Exploring our art and design area – develop awareness of mark making and creating with a purpose and intention.</p> | <p>Movement</p> <p>Activate cause and effect toys. Explore coded mice – give basic commands.</p> <p>Follow positional language vocabulary.</p> | <p>Grouping</p> <p>Sort resources into categories.</p> <p>Say which group has more/less.</p> | <p>Writing</p> <p>Type class name into login page – identifying the sounds on a keyboard.</p> | <p>Programming</p> <p>Talk through a sequence of directions or events – retelling stories – guiding a friend through a story. Programming a coded mouse.</p> |

## Banks Road Infant and Nursery School

### Component Plan for KS1 (from Teach Computing)

|               | Computing systems and networks                                                                                                     | Creating media                                                                                                                           | Programming A                                                                                                         | Data and information                                                                                                      | Creating media                                                                                                                 | Programming B                                                                                                                                 |
|---------------|------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Year 1</b> | <b>Technology around us</b><br><br>Recognising technology in school and using it responsibly.                                      | <b>Digital painting</b><br><br>Choosing appropriate tools in a program to create art, and making comparisons with working non-digitally. | <b>Moving a robot</b><br><br>Writing short algorithms and programs for floor robots, and predicting program outcomes. | <b>Grouping data</b><br><br>Exploring object labels, then using them to sort and group objects by properties.             | <b>Digital writing</b><br><br>Using a computer to create and format text, before comparing to writing non-digitally.           | <b>Programming animations</b><br><br>Designing and programming the movement of a character on screen to tell stories.                         |
| <b>Year 2</b> | <b>Information technology around us</b><br><br>Identifying IT and how its responsible use improves our world in school and beyond. | <b>Digital photography</b><br><br>Capturing and changing digital photographs for different purposes.                                     | <b>Robot algorithms</b><br><br>Creating and debugging programs, and using logical reasoning to make predictions.      | <b>Pictograms</b><br><br>Collecting data in tally charts and using attributes to organise and present data on a computer. | <b>Digital music</b><br><br>Using a computer as a tool to explore rhythms and melodies, before creating a musical composition. | <b>Programming quizzes</b><br><br>Designing algorithms and programs that use events to trigger sequences of code to make an interactive quiz. |

### Teach Computing curriculum overview for KS1

|        | Term 1                                     | Term 2                                                   | Term 3                                                         | Term 4                                   | Term 5                                                          | Term 6                                                    |
|--------|--------------------------------------------|----------------------------------------------------------|----------------------------------------------------------------|------------------------------------------|-----------------------------------------------------------------|-----------------------------------------------------------|
|        | -To identify technology                    | -To describe what different freehand tools do            | -To explain what a given command will do                       | -To label objects                        | -To use a computer to write                                     | -To choose a command for a given purpose                  |
| Year 1 | -To identify a computer and its main parts | -To use the shape tool and the line tools                | -To act out a given word                                       | -To identify that objects can be counted | -To add and remove text on a computer                           | -To show that a series of commands can be joined together |
|        | -To use a mouse in different ways          | -To make careful choices when painting a digital picture | -To combine forwards and backwards commands to make a sequence | -To describe objects in different ways   | -To identify that the look of text can be changed on a computer | -To identify the effect of changing a value               |

## COMPUTING

## Banks Road Infant and Nursery School

|        |                                                                       |                                                           |                                                                   |                                                                        |                                                      |                                                        |
|--------|-----------------------------------------------------------------------|-----------------------------------------------------------|-------------------------------------------------------------------|------------------------------------------------------------------------|------------------------------------------------------|--------------------------------------------------------|
|        | -To use a keyboard to type on a computer                              | -To explain why I chose the tools I used                  | -To combine four direction commands to make sequences             | -To count objects with the same properties                             | -To make careful choices when changing text          | -To explain that each sprite has its own instructions  |
|        | -To use the keyboard to edit text                                     | -To use a computer on my own to paint a picture           | -To plan a simple program                                         | -To compare groups of objects                                          | -To explain why I used the tools that I chose        | -To design the parts of a project                      |
|        | -To create rules for using technology responsibly                     | -To compare painting a picture on a computer and on paper | -To find more than one solution to a problem                      | -To answer questions about groups of objects                           | -To compare typing on a computer to writing on paper | -To use my algorithm to create a program               |
| Year 2 | -To recognise the uses and features of information technology         | -To use a digital device to take a photograph             | -To describe a series of instructions as a sequence               | -To recognise that we can count and compare objects using tally charts | -To say how music can make us feel                   | -To explain that a sequence of commands has a start    |
|        | -To identify the uses of information technology in the school         | -To make choices when taking a photograph                 | -To explain what happens when we change the order of instructions | -To recognise that objects can be represented as pictures              | -To identify that there are patterns in music        | -To explain that a sequence of commands has an outcome |
|        | -To identify information technology beyond school                     | -To describe what makes a good photograph                 | -To use logical reasoning to predict the outcome of a program     | -To create a pictogram                                                 | -To experiment with sound using a computer           | -To create a program using a given design              |
|        | -To explain how information technology helps us                       | -To decide how photographs can be improved                | -To explain that programming projects can have code and artwork   | -To select objects by attribute and make comparisons                   | -To use a computer to create a musical pattern       | -To change a given design                              |
|        | -To explain how to use information technology safely                  | -To use tools to change an image                          | -To design an algorithm                                           | -To recognise that people can be described by attributes               | -To create music for a purpose                       | -To create a program using my own design               |
|        | -To recognise that choices are made when using information technology | -To recognise that photos can be changed                  | -To create and debug a program that I have written                | -To explain that we can present information using a computer           | -To review and refine our computer work              | -To decide how my project can be improved              |

## Progression of Knowledge and Threads of Learning

|     | <b>THREADS OF LEARNING</b> Highlighted text links to the same knowledge thread of the same colour across year groups                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| FS1 | <b>1. Computing systems and networks – The world around us</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <b>2. Creating Media – Mark making</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <b>3. Programming – Toy exploration</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <b>4. Data and information – Exploring the world around us</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|     | <p><b>Substantive Knowledge Threads:</b><br/>To know that there are resources/ technology in their familiar environment and can say the obvious physical differences between them.<br/>To differentiate between pictures and texts in books and through technology.<br/>To know some letters e.g. letters in their name.</p> <p><b>Disciplinary Knowledge Threads:</b><br/>Explore the book corner in the classroom.<br/>Practice writing their own name.<br/>Self register – finding their own name on a card.</p> | <p><b>Substantive Knowledge Threads:</b><br/>To know what it means to mark make.<br/>To know their marks have a purpose.<br/>To know that different tools have a different effect e.g. paint in comparison to pencil.<br/>To know that marks can be big, small and different shapes.<br/>To name some 2D shapes.<br/>To know the words big and small.</p> <p><b>Disciplinary Knowledge Threads:</b><br/>Copy gross motor actions in the air and show a good sense of movement, direction and shape.<br/>Mark make using a variety of art tools e.g. paint, crayons, felt tips, whiteboard pens.<br/>Play shape games and go on a shape hunt in the environment.</p> | <p><b>Substantive Knowledge Threads:</b><br/>To know that toys all have a different use and purpose.<br/>To know that technology may need to be activated by them.<br/>To know some positional language vocabulary e.g. up, down, backwards, forwards, turn.</p> <p><b>Disciplinary Knowledge Threads:</b><br/>Explore technology with support e.g. pressing a button – showing curiosity for how things work/move/change.<br/>Press a button on a toy/computing resource and cause a reaction, and then be able to repeat this on a different occasion.<br/>Push and pull cars/toys across a surface.<br/>Ride a tricycle and turn in different directions.</p> | <p><b>Substantive Knowledge Threads:</b><br/>To name the colours.<br/>To count and recognise a big group of objects compared to a small group.<br/>To transport objects in groups.<br/>To know that objects have a place.</p> <p><b>Disciplinary Knowledge Threads:</b><br/>Tidy up classroom resources back into the right box.<br/>Sort common and familiar objects into colour groups such as unifix cubes – being able to group them into the same colour.<br/>With support, be able to count out objects to match a number.</p> |
| FS2 | <b>1. Computing systems and networks – The world around us</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <b>2. Creating Media – Purposeful mark making with different mediums</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <b>3. Programming – Cause and effect</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <b>4. Data and information – Collecting data</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

|        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|        | <p><b>Substantive Knowledge Threads:</b><br/>To know the alphabet in both lower and upper case.<br/>To know what numbers 0-9 look like.<br/>To know the names of some familiar technology.<br/>To know there are many uses for technology.<br/>To know that you can use technology for different purposes e.g. a camera for photos, an ipad for drawing.</p> <p><b>Disciplinary Knowledge Threads:</b><br/>Take part in daily phonics lessons to learn the grapheme/phoneme correspondence.<br/>Explore number cards and put them into order – play games such as find the missing number.<br/>Draw pictures/write on the interactive whiteboard.</p> | <p><b>Substantive Knowledge Threads:</b><br/>To know that the marks they make have purpose.<br/>To know how to write the majority of lowercase letters and capital letters.<br/>To draw different shapes.<br/>To know that we can use technology for mark making.<br/>To know and choose which art tool they need for each job.</p> <p><b>Disciplinary Knowledge Threads:</b><br/>Use a range of classroom art tools to create a physical picture.<br/>Draw pictures/write on the interactive whiteboard.<br/>Handwriting practice linked to the graphemes learnt in phonics.<br/>Practice writing their own name successfully.</p> | <p><b>Substantive Knowledge Threads:</b><br/>To know and follow a simple verbal instruction when directed by and adult.<br/>To say a verbal instruction to a peer.<br/>To know and use positional language when talking about an object.<br/>To know that technology needs to be activated.</p> <p><b>Disciplinary Knowledge Threads:</b><br/>Explore new toys/technology such as pressing buttons on the programmable mice, pressing icons on an interactive whiteboard.<br/>Taking part in board games and following the rules and once confident to then explain the rules to a friend.</p> | <p><b>Substantive Knowledge Threads:</b><br/>To know that objects can be grouped by a set criteria e.g. colour, shape, size.<br/>To have a secure understanding of numbers to 10.<br/>To know 1:1 correspondent counting.<br/>To name 2D shapes.<br/>To name the colours..</p> <p><b>Disciplinary Knowledge Threads:</b><br/>Explore maths resources such as the sorting sets and sort them into their corresponding coloured bowls.<br/>'Choose it, use it, put it away' – tidy up resources into the right area.<br/>Talk about the differences and similarities between themselves and their friends.</p> |
| YEAR 1 | <p><b>1. Computing systems and networks – Technology Around Us</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <p><b>2. Creating Media – Digital Painting/Digital Writing</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <p><b>3. Programming - Moving a robot/Animations</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <p><b>4. Data and information – Grouping data</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|        | <p><b>Substantive Knowledge Threads:</b><br/>To identify and name different technology.<br/>To know what a keyboard is and know that it can be used for typing.<br/>To know how to use a keyboard and a mouse.<br/>To begin to know that technology needs to be used responsibly to ensure their own safety.</p> <p><b>Disciplinary Knowledge Threads:</b><br/>Explore the technology in their classroom environment and take</p>                                                                                                                                                                                                                     | <p><b>Substantive Knowledge Threads:</b><br/>To know there are a range of digital tools to create a picture on a programme.<br/>To know that tools can be selected using the mouse pad and cursor.<br/>To know that programmes serve different purposes e.g. paint for creating pictures, notebook for typing.</p> <p><b>Disciplinary Knowledge Threads:</b><br/>Use the paint programme on the laptops to draw a picture,</p>                                                                                                                                                                                                      | <p><b>Substantive Knowledge Threads:</b><br/>To follow 2 or more verbal instructions.<br/>To know how to verbally give 2 or more instructions in a sequence.<br/>To know positional language (as learnt in EYFS) and specific positions such as left, right, north, south, east, west.<br/>To know how to make a Beebot move in a certain direction.</p> <p><b>Disciplinary Knowledge Threads:</b></p>                                                                                                                                                                                         | <p><b>Substantive Knowledge Threads:</b><br/>To name a criteria that objects could be grouped by.<br/>To group physical objects by set criteria.<br/>To know data can be collected and presented in a bar chart.</p> <p><b>Disciplinary Knowledge Threads:</b><br/>Take part in a class vote – count the votes for each choice and present it in a tally/bar chart.</p>                                                                                                                                                                                                                                      |

|               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|               | <p>part in the Teach Computing lessons.</p> <p>Practice using the laptop mouse for navigating around the computer system.</p> <p>Practice finding letters/numbers on a keyboard and use this to then be able to log onto a computer.</p>                                                                                                                                                                                                                                                                                                                                                                                         | <p>exploring the different tool options and colours.</p> <p>Type words, their name or a simple phrase on the notebook app or Microsoft word.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <p>Play with Beebots – use them on a floor mat and programme in a sequence of commands.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>YEAR 2</b> | <p><b>1. Computing systems and networks – IT around us</b></p> <p><b>Substantive Knowledge Threads:</b><br/>To identify and name technology and to know its function/purpose.<br/>To know how to use technology for its given purpose.<br/>To know how to use technology safely and responsibly.</p> <p><b>Disciplinary Knowledge Threads:</b><br/>Look at technology in our environment – use of the internet to discuss and learn about different types of technology which is not accessible in our environment.<br/>Log onto the laptops independently using a password.<br/>Individual log-ons for code.org. – modules.</p> | <p><b>2.Creating Media – Digital photos/Digital music</b></p> <p><b>Substantive Knowledge Threads:</b><br/>To know there are different tools that can be used to alter a photograph to change its effect.<br/>To know the functions of some of the tools and the impact they make.<br/>To know that a photograph can be landscape or portrait.<br/>To know that technology can create a piece of music.</p> <p><b>Disciplinary Knowledge Threads:</b><br/>Using PowerPoint children change and edit a photograph – children copy and paste a photo from the internet into the PowerPoint and then use editing tools.<br/>Take photos using an ipad.</p> | <p><b>3.Programming – Robot algorithms/quizzes</b></p> <p><b>Substantive Knowledge Threads:</b><br/>To know that an algorithm is a set of instructions.<br/>To know what a code is.<br/>To know that a bug is an error.<br/>To problem solve a bug.<br/>To know that algorithms can be used in different contexts.<br/>To know how to make their own algorithm and be able to program a Bee-Bot with a set of instructions.</p> <p><b>Disciplinary Knowledge Threads:</b><br/>Use code.org to complete the modules and mini tasks for coding.<br/>Use J2E for programming and for animation – online BeeBot.</p> | <p><b>4.Data and information – Pictograms</b></p> <p><b>Substantive Knowledge Threads:</b><br/>To know that there are different ways that data can be represented on computer programmes.<br/>To know the different representations.<br/>To group data by a set of criteria.<br/>To create their own criteria to group data.</p> <p><b>Disciplinary Knowledge Threads:</b><br/>J2E – data collection/bar graph software.<br/>Linked to maths.</p> |

| EYFS                                                          |                                                                             |                                                          |
|---------------------------------------------------------------|-----------------------------------------------------------------------------|----------------------------------------------------------|
| Computing systems and networks - Technology around us         | Creating media - Digital painting                                           | Creating media - Digital writing                         |
| Technology, computer, keyboard, screen, buttons               | Paint program, tool, paintbrush, erase, fill, draw, colour, picture         | Alphabet, letters, numbers, type, space, capital letters |
| Data and information – Grouping                               | Programming A - Moving a robot                                              | Programming B – Programming animations                   |
| Group, colour, size, shape, more, less, most, least, the same | Bee-bot, forwards, backwards, left, right, direction, turn, route, go, stop | Compare, start, reset, change, design                    |

| Year 1                                                                                                                         |                                                                                                                                                                  |                                                                                                                                                                                                              |
|--------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Computing systems and networks - Technology around us                                                                          | Creating media - Digital painting                                                                                                                                | Creating media - Digital writing                                                                                                                                                                             |
| technology, computer, mouse, trackpad, keyboard, screen, double-click, typing.                                                 | paint program, tool, paintbrush, erase, fill, undo, shape tools, line tool, fill tool, undo tool, colour, brush style, brush size, pictures, painting, computers | word processor, keyboard, keys, letters, type, numbers, space, backspace, text cursor, capital letters, toolbar, bold, italic, underline, mouse, select, font, undo, redo, format, compare, typing, writing. |
| Data and information – Grouping                                                                                                | Programming A - Moving a robot                                                                                                                                   | Programming B – Programming animations                                                                                                                                                                       |
| object, label, group, search, image, property, colour, size, shape, value, data set, more, less, most, fewest, least, the same | Bee-Bot, forwards, backwards, turn, clear, go, commands, instructions, directions, left, right, route, plan, algorithm, program.                                 | ScratchJr, command, sprite, compare, programming, area, block, joining, start, run, program, background, delete, reset, algorithm, predict, effect, change, value, instructions, design.                     |

| Year 2                                                                                                                                                                                                                                 |                                                                                                                                             |                                                                                                                                                                                                       |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Computing systems and networks - Information technology around us                                                                                                                                                                      | Creating media - Digital music                                                                                                              | Creating media - Digital photography                                                                                                                                                                  |
| Information technology (IT), computer, barcode, scanner/scan                                                                                                                                                                           | music, quiet, loud, feelings, emotions, pattern, rhythm, pulse, pitch, tempo, rhythm, notes, create, emotion, beat, instrument, open, edit. | device, camera, photograph, capture, image, digital, landscape, portrait, framing, subject, compose, light sources, flash, focus, background, editing, filter, format, framing, lighting,             |
| Data and information – Pictograms                                                                                                                                                                                                      | Programming A - Robot algorithms                                                                                                            | Programming B - Programming quizzes                                                                                                                                                                   |
| more than, less than, most, least, common, popular, organise, data, object, tally chart, votes, total, pictogram, enter, data, compare, objects, count, explain, attribute, group, same, different, conclusion, block diagram, sharing | instruction, sequence, clear, unambiguous, algorithm, program, order, prediction, artwork, design, route, mat, debugging, decomposition     | sequence, command, program, run, start, outcome, predict, blocks, design, actions, sprite, project, modify, change, algorithm, build, match, compare, debug, features, evaluate, decomposition, code. |

| Year 2                                                                         |                                                                                                                                                                  |                                                                                                                                                                                                              |
|--------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Computing systems and networks - Technology around us                          | Creating media - Digital painting                                                                                                                                | Creating media - Digital writing                                                                                                                                                                             |
| technology, computer, mouse, trackpad, keyboard, screen, double-click, typing. | paint program, tool, paintbrush, erase, fill, undo, shape tools, line tool, fill tool, undo tool, colour, brush style, brush size, pictures, painting, computers | word processor, keyboard, keys, letters, type, numbers, space, backspace, text cursor, capital letters, toolbar, bold, italic, underline, mouse, select, font, undo, redo, format, compare, typing, writing. |

| Data and information – Grouping                                                                                                | Programming A - Moving a robot                                                                                                   | Programming B – Programming animations                                                                                                                                                   |
|--------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| object, label, group, search, image, property, colour, size, shape, value, data set, more, less, most, fewest, least, the same | Bee-Bot, forwards, backwards, turn, clear, go, commands, instructions, directions, left, right, route, plan, algorithm, program. | ScratchJr, command, sprite, compare, programming, area, block, joining, start, run, program, background, delete, reset, algorithm, predict, effect, change, value, instructions, design. |

### Sticky Knowledge/Retrieval

Sticky knowledge refers to key information that is not only well understood but also easily retained and recalled over time. This concept is crucial as it enhances pupils' ability to apply their knowledge in varied contexts, facilitating deeper comprehension and long-term retention. It incorporates key vocabulary, knowledge, key questions and considerations.

Sticky knowledge combines a variety of methods to support pupils' retention: immediate retrieval, short term memory and spaced retrieval; each method playing a significant part in the children's memory and ability to retain key learning, knowledge and skills.

At Banks Road sticky knowledge tasks are planned thoroughly to ensure appropriate coverage of all wider curriculum subjects and the units and key learning within them.

In Foundation Stage time is set aside at the beginning of each session to focus on previous learning and there are sessions each day to focus on sticky knowledge tasks, primarily through their use of floorbooks and learning journey walls.

In Key Stage One retrieval is built into the start of every lesson and spaced retrieval is planned each half term using the learning walls and daily retrieval discussions.

### Assessment Criteria

| EYFS                                                                                                                                                                                                                                                                              |                                                                                                                                                                                                                                                             |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>Understanding technology:</b></p> <ul style="list-style-type: none"> <li>☐ Recognises and talks about technology in everyday life (e.g. phones, tablets, TVs).</li> <li>☐ Knows that technology can help us do different things (take photos, play music, etc.).</li> </ul> | <p><b>Creating media:</b></p> <ul style="list-style-type: none"> <li>☐ Uses technology to create simple digital content (e.g. drawing, taking a photo).</li> <li>☐ Begins to explore making choices about tools or colours in creative software.</li> </ul> |
| <p><b>Programming:</b></p> <ul style="list-style-type: none"> <li>☐ Follows simple, ordered instructions (e.g. “First do this, then that”).</li> <li>☐ Begins to explore giving simple instructions to toys or apps (e.g. Beebot, ScratchJr).</li> </ul>                          | <p><b>Data collection:</b></p> <ul style="list-style-type: none"> <li>☐ Sorts and groups objects or pictures by simple characteristics (colour, shape, etc.).</li> <li>☐ Talks about similarities and differences they notice.</li> </ul>                   |
| <p><b>E-Safety:</b></p> <ul style="list-style-type: none"> <li>☐ Understands that some information is private (e.g. name, address).</li> </ul>                                                                                                                                    |                                                                                                                                                                                                                                                             |

☐ Knows to tell a trusted adult if something online makes them feel worried or sad.

### YEAR 1

#### Understanding technology:

- ☐ Identifies different types of technology and what they are used for.
- ☐ Understands that technology follows instructions (input → process → output).

#### Creating media:

- ☐ Combines text and images to make simple digital content (e.g. poster, story).
- ☐ Understands how to save and open their work.

#### Programming:

- ☐ Creates simple sequences of instructions to make an object move.
- ☐ Understands that programs need clear steps to work correctly.

#### Data collection:

- ☐ Collects simple data (e.g. favourite fruit) and presents it using pictograms or tallies.
- ☐ Begins to interpret basic results ("More people like apples than bananas")

#### E-safety:

- ☐ Knows what personal information should not be shared online.
- ☐ Recognises when something online might be inappropriate and seeks help.

| YEAR 2                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                         |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>Understanding technology:</b></p> <ul style="list-style-type: none"> <li>Describes the main parts of a computer system (keyboard, mouse, screen, etc.).</li> <li>Understands the basic function of hardware and software and how they work together.</li> </ul> | <p><b>Creating media:</b></p> <ul style="list-style-type: none"> <li>Creates and edits digital media for a specific purpose (e.g. short animation, sound recording).</li> <li>Evaluates and improves their digital work.</li> </ul>     |
| <p><b>Programming:</b></p> <ul style="list-style-type: none"> <li>Designs, writes and debugs simple programs using sequencing and repetition.</li> <li>Predicts what will happen when a program runs and corrects mistakes (debugging).</li> </ul>                    | <p><b>Data collection:</b></p> <ul style="list-style-type: none"> <li>Collects, organises and presents data digitally (e.g. charts on a computer).</li> <li>Interprets data to answer simple questions and draw conclusions.</li> </ul> |
| <p><b>E-safety:</b></p> <ul style="list-style-type: none"> <li>Understands how to stay safe and kind online (e.g. respectful communication).</li> </ul>                                                                                                               |                                                                                                                                                                                                                                         |

? Knows what to do if they see or experience something upsetting online.