Bidston Avenue Primary School

'Achieving Together'

BIDSTON AVENUE

Skills & Knowledge Progression: Computing

Year group	Computer Science	Information Technology	Digital Literacy	E-Safety
Nursery (F1)	• Begin to create a basic sequence using a programmable toy e.g. Code-a-pillar • Begin to follow a set of instructions to complete a task.	• Explore and identify different types of technology; through role play, the interactive whiteboard, iPads and programmable toys. • Identify and understand the purpose of technology in the environment e.g. pelican crossing, self-serve scanner in supermarkets. • With support, begin to identify technology for a purpose.	• Know that information can be retrieved from technological devices and the internet. • Understand directional symbols when using programmable toys (forwards, backwards, turn, stop).	• Understand the need to keep safe when using IT; • Know that the internet can be fun and exciting, but that we follow rules to keep safe. • Know that they must ask an adult before using the internet/accessing games/websites. • Know that adults can help us to use the internet safely.
Reception (F2)	• Create a basic sequence using programmable toys e.g. Bee-Bot. • Follow a set of instructions to complete a task. • Encourage children to speculate on why things happen or how things work.	• Select and use technology for a purpose. • Recognise that a range of technology is used at home and in school. • Use technology to support independent play i.e. Talking Pegs/Tins to access Continuous Provision areas.	• Understand that different icons can cause things to happen in a computer program. • Develop understanding of directional symbols when using programmable toys, computer programs and apps.	• Understand the need to keep safe when using IT; • Identify ways that we use the internet i.e. watch TV shows/videos, play games, find out information and help us learn at home. • Know that they must ask an adult before using the internet/accessing games/websites. • Know that adults can help us to use the internet safely. • Know that they must not click/access unfamiliar programs or icons. • Know that personal information must not be shared.

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Year 1	• Follow and complete a simple set of instructions; • Children can explain that an algorithm is a set of instructions to complete a task; • Compare the effects of adhering strictly to instructions to completing tasks without complete instructions; • Follow and create simple instructions on the computer; • To consider how the order of instructions affects the result; • Predict the outcome of a command on a device; • Match a command to an outcome; • Run a command on a device • Explain what a program should do • Choose the order of commands in a sequence	• Identify examples of technology in school, at home and in the wider area; • Know what a spreadsheet program looks like; • Enter data into spreadsheet cells; • Add clipart images to cells; Use the lock, move cell, speak and count functions in a spreadsheet.	• To understand the functionality of the direction keys • Find examples of where technology is used; • Find examples of technology outside school.	• Understand the need to keep safe when using IT; • Know that they should close lid of laptop or turn off the screen if they come across inappropriate images or content; • Recognise that information found or transmitted online can be seen by others - e.g. images found online can be seen by others too & search strings can be seen by those running the search engine; • Describe what personal information is and what things we should not share with strangers.

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Year 2	• Control a toy by inputting instructions; • Record a sequence of instructions as an algorithm; • Predict how a program will work; • Program a toy to follow an algorithm; • Debug a program.	• Create illustrations for a story; • Use different painting tools to improve illustrations; • Save and open work again later; • Combine a number of illustrations to create an e-book. • Use sound recording equipment to record sounds • Develop skills in saving and storing sounds on the computer • Understand how a talking book differs from a paper-based • share recordings with an audience.	• Use 'search' to find particular things; • Use search tools to help cut down the number of search results; • Use a search engine to search the internet; • Tell an adult if our results include something that shocks or upsets us; • Use what we have found out to create a leaflet. • Talk to others online in a polite and safe way; • Explain how our time online leaves a trail; • Keep our personal information safe online; • Use email to communicate with other people; • Open and send an email; • Use Purple Mash to share work and look at other children's work. • Explain how using technology is different to using pen and paper; • Develop collaboration skills as they work together in a group;	• Explain what type of information is personal to us and ways we can keep it safe; • Explore the idea of a digital footprint and what data may be involved; • Describe ways a website/app may encourage children to use it more often; • Recognise that online behaviour and offline behaviour should not be different and the importance of being kind to one another; • Explore what to do if children are upset or shocked by somebody else online.

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Year 3	• Detect and correct (debug) errors in more code. • Describe carefully what happens in computer games; • Understand that computer games are made from a set of algorithms that the computer follows; • Use logical reasoning to make predictions of what a program will do; • Test your predictions; • Think about how we should use computer games safely and to balance the time we play them with other activities • have a clear understanding of algorithms as • sequences of instructions • convert simple algorithms to programs • predict what a simple program will do • spot and fix (debug) errors in their programs.	• Choose a subject and compose a photograph; • Use a digital camera (or a camera app) to take a photograph; • Review captured images and decide whether to re-take or keep the image; • Edit and enhance images using software and online tools; • Share our best images in a portfolio. • Sort and classify a group of items by answering questions • collect data using tick charts or tally charts • use simple charting software to produce pictograms and other basic charts • record information on a digital map; • Enter data into the cells of a spreadsheet.	• Use emails to communicate-opening, composing and sending them; • Create and add attachments to emails; • Open and listen to audio files; • Explain the two parts of an email address; • Be wary of unexpected emails and know what to do if you receive one. • Collaborate on the activity; • Improve research skills through searching the internet; • Build a presentation based on researched information • Present what we have found out in front of others.	• Explore how we can be e-sponsible online in the way we act and the actions we take; • Identify ads in a set of search results and understand why they appear there; • Begin consider the choices we can make in our online behaviour, just as we can in our offline behaviour; • Describe some of the consequences that our online behaviour can have; • Understand how to use key search terms to search the internet safely.

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Year 4	• Use logical reasoning to explain how simple algorithms work; • Spot and debug mistakes in an algorithm; • Understand how to design and edit projects in Scratch; • Write a program in Scratch to create the animation; • Use different strategies to find and fix errors in code;	• Begin to understand how to design a survey; • Use the web to help collect data; • Analyse data using graphs and charts; • Interpret survey results and present our findings; • Begin to understand some of the ethical and legal aspects of collecting data; • Design and make an on-screen prototype of a computer-controlled toy; • Understand different forms of input and output (such as sensors, switches, motors, lights and speakers); • Describe the internet as a network of networks.	• Begin to understand how email works; • Use different tools and skills when composing an email; • Begin to understand the correct 'netiquette' when communicating with different people, for different reasons; • Work collaboratively with a remote partner; • Video conference and share work remotely. • Describe how information is shared across the internet • Explain why a network needs protecting • Describe how networked devices join a network • Explain that the internet is used to provide many services; • I can recognise that the World Wide Web contains websites and web pages; • Explain the types of media that can be shared on the WWW; • Describe where websites are stored when uploaded to the WWW; • Describe how to access websites on the WWW.	• Analyse information to make a judgement about probable accuracy, and understand why it is important to make careful decisions before posting online. • Explain what is meant by fake news, e.g. why some people will create stories or alter photographs and put them online to pretend something is true when it isn't. • Describe ways of identifying when online content has been commercially sponsored or boosted, (e.g. by commercial companies or by vloggers, content creators, or influencers). • Describe how fake news may affect someone's emotions and behaviour, and explain why this may be harmful.

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Year 5	• Use selection and repetition in a game; • Understand and use variables; • Recognise the importance of user interface design; • Consider user input and outputs; • Detect and correct (debug) errors in code; • Use algorithms to create 'turtle graphics'; • Code up a simple web page using HTML; • Use html tags for elementary mark up; • Use hyperlinks to connect ideas and sources	• Create a storyboard to plan what to record and which techniques to use; • Use a digital device to record video and audio; • Use different camera angles, techniques and tools when filming; • Use different programs and apps to edit recorded video; • Use computer-based data logging to automate the recording of data; • Use spreadsheets to create charts; • Analyse data, explore inconsistencies in data and make predictions; • Present findings and predictions to each other in; • Understand some technical aspects of how the Internet makes the web possible; • Use tools and techniques to create vector graphics; • Experiment with tools such as duplicate, layer, group and ungroup, line weight, gradient and colour	• Develop an appreciation of the links between geometry and art; • Develop an awareness of computer-generated art; • Understand the difference between digital and analogue techniques for measuring the weather; • Understand some of the risks in using the web	• Think through the consequences of actions when using digital technology (both short– and long term) • Discuss the nature of privacy online and the potential advantages and disadvantages of handing over personal data to large companies • Know how to report inappropriate content online (e.g. to ChildLine or CEOP); • Understand how once something is shared online, we lose control over it. • Identify what could be phishing messages/links and what handed over information could be used for.

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Year 6	• Detect and correct (debug) errors in more complex code. • Use sequence, selection, repetition and variables to create a computer program; • Use iterative development techniques to improve a game to develop your code and game.	• Understand the work of architects, designers and engineers; • Use CAD (computer aided design) tools; • Explore and experiment with 3D environments and in three dimensions; • Design a 3D object that can be made with a 3D printer; • Explain how semaphore and Morse code can be used to send messages; • Encrypt and decrypt messages using simple ciphers; • Use search engine tools effectively to find specific information.	• Identify if a web page is encrypted and how encryption works on the web; • Explain how search results are ranked and why the order of results is important; • Evaluate which online communication tools are most suitable for particular purposes; • Choose when to and when not to share information online based on the platform or site being used.	• Describe what makes a strong password; • Explain how passwords help to protect our data; • Understand basic principle of copyright and the how online content has been created by somebody who could own it; • Explore different types of content covered by creative content licenses, for example. • Focus on a particular e-safety message and create a website for younger children; • Know to report inappropriate content to CEOP.