Primary Computing Progression

Computer Science	Digital Literacy	Information Technology		
Programming and Theory	**E-Safety & Research**	**Communication**	**Data**	**Multimedia**
Programming Simulations Computer Theory	Research E-safety	Word processing Presentations Online collaboration	Graphs Databases Spreadsheets	Creating images Photography Animation Video Audio

EYFS	
COMPUTER SCIENCE	• I can help adults operate equipment around the school, independently operating simple equipment • I can use simple software to make things happen • I can explore options and make choices with toys, software and websites • I can press buttons on a floor robot and talk about the movement
DIGITAL LITERACY	• I can play appropriate games on the Internet. • I can talk about good and bad choices in real life e.g. taking turns, saying kind things, helping others, telling an adult if something upsets you.
INFORMATION TECHNOLOGY	• I have developed an interest in ICT by using age appropriate websites or programs. • I can use a mouse to rearrange objects and pictures on a screen. Begin to use a keyboard. • I recognise text, images and sound when using ICT. • I can use a camera or sound recorder to collect photos or sound • I can use a simple pictogram or set of photos to count and organise information.

Primary Computing Progression

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
COMPUTER SCIENCE	**Unplugged:** • Understand what algorithms are • Understand that algorithms are implemented as programs on digital devices **Coding/Programming:** • Understand that programs execute by following precise and unambiguous instructions • Create simple programs • Debug simple programs	**Unplugged:** • Understand what algorithms are • Understand that algorithms are implemented as programs on digital devices **Coding/Programming:** • Understand that programs execute by following precise and unambiguous instructions • Create simple programs • Debug simple programs • Use logical reasoning to predict the behaviour of own programs • Work with various forms of input and output	**Unplugged:** • Solve problems by decomposing them into smaller parts • Use logical reasoning to explain how some simple algorithms work **Coding/Programming:** • Detect and correct errors in algorithms and programs • Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems Use sequence, selection and repetition in programs • Work with various forms of input and output	**Unplugged:** • Solve problems by decomposing them into smaller parts • Use logical reasoning to explain how some simple algorithms work **Coding/Programming:** • Detect and correct errors in algorithms and programs • Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems • Use sequence, selection and repetition in programs • Work with variables • Use repetition and loops • Work with various forms of input and output	**Unplugged:** • Solve problems by decomposing them into smaller parts • Use logical reasoning to explain how some simple algorithms work • Detect and correct errors in algorithms and programs • Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems **Coding/Programming:** • Use sequence, selection and repetition in programs • Work with variables • Work with various forms of input and output • Develop an understanding of how values used in code affect the action of the object they relate to.	**Unplugged:** • Solve problems by decomposing them into smaller parts • Use logical reasoning to explain how some simple algorithms work • Detect and correct errors in algorithms and programs • Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems **Coding/Programming:** • Use sequence, selection and repetition in programs • Work with variables • Work with various forms of input and output • Use variables in more complex ways, and to manipulate inputs to create useful outputs.

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	Skills: • **I can physically follow instructions** • **I can give others instructions to move around** • **I can predict outcomes from sequences** • **I can begin to identify an algorithm to achieve a specific purpose** • **I can create an algorithm to execute a program on a digital device** • **I am beginning to predict what will happen for a short sequence of instructions in a program** • **I am beginning to use software to create movement and patterns on a screen** • **I can use Computer Science vocabulary accurately** • I am able to sequence and programme a digital device specifying distance and turns, and drawing a trail	**Skills:** • I can physically follow instructions including turns (right angle) • I can create an algorithm for a specific purpose • I can predict what will happen and test results • I can use software to create movement and patterns on a screen • I know that programs respond to different sorts of inputs • I can use different sorts of input to control objects on screen • I can use the word debug to correct any mistakes and explain what I have done • I can experience a range of control devices such as a microscope, sound recorders, cameras and other devices	**Skills:** • I can plan and enter a sequence of instructions on a robot/sprite to achieve specific outcomes • I can test and improve/debug programmed sequences • I can use computational thinking to solve open ended problems • I can talk about algorithms planned by others and identify any problems and the expected outcome • I can explain how algorithms work, predicting outcomes and debugging • Explore instructions to control software or hardware with an input using 'if then' commands	**Skills:** • I can plan and enter a sequence of instructions on a robot/sprite to achieve specific outcomes • I can test and improve/debug programmed sequences • I can use selection (if else) blocks to give different outcomes. • I can use an algorithm to sequence and order more complex programming. • I can explain how algorithms work, predicting outcomes and debugging • I can use loops (repeat/forever) to achieve solutions to tasks • I can explain how computers use variables to store information and include this in my projects	**Skills:** • Explore/ refine procedures using repeat to achieve solutions to problems • Identify problems and identify a solution for a program • Write down the steps required to achieve the outcome that is wanted and refer to this when programming • Predict the outputs for the steps in an algorithm • Use the process: plan, program, test and review • Write a program which follows an algorithm to solve a problem for a digital device • Group commands as a procedure to achieve a specific outcome within a program • Understand how computers can generate random numbers and how these can be used in simulations •	**Skills:** • Record in some detail the steps that are required to achieve an outcome • Predict the outputs for the steps in an algorithm • Use the process: plan, program, test and review a program • Write a program which follows an algorithm to solve a problem and achieve a planned outcome • Group commands as a procedure to achieve a specific outcome within a program • I understand how sensors can be used to measure input in order to activate a procedure or sequence and talk about applications in society • I can use variables to manipulate inputs to create useful outputs • I can use property values and parameters to store information about objects

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	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Digital Literacy	**Key Skills/Objectives:** • I can access a website and navigate around it • I can recognise how I use technology in my home and at school • I am beginning to evaluate web sites by giving opinions • I know strategies if I see something inappropriate on a website and/or digital device • I understand that what is meant by personal information and explore ways to keep this private • I know what it means to be a good digital citizen • I know that online communication is not always true • I own my work by adding my name and data • I respect the work of others stored on a shared drive (online) • I can publish my work online	**Key Skills/Objectives:** • I can use a search engine to find information using agreed key words • I can navigate to a website by entering a simple web address • I know about the risks of advertising or pop-up windows • I understand that some information online may be untrue • I know how to generate a strong password and can keep my password secret • I can contribute to online class blogs • I understand the need to be respectful online • I can begin to understand the concept of online • bullying and the role of the bystander • I am developing an understanding of the • consequences of online bullying • I can recall online safety rules for reporting • concerns and inappropriate behaviour. • I know that I need to check information before uploading • I know that some video games and online services are not appropriate for my age	**Key Skills/Objectives:** • I can use an age appropriate search engine independently • I can explore and discuss the benefits of a range of online communication tools • I know how to respond to unpleasant communications • I understand the need to keep personal information private and am responsible in my online presence • I know the difference between personal, private and public online spaces and the risks associated with these • I understand that there are rules about using public spaces online • I understand that some information online may be untrue (revisit)	**Key Skills/Objectives:** • I can use an internet search to answer questions on a topic and know there are different search engines available • I can use different search engines and their features, e.g. Google Image Search, video, sound etc. • I can understand copyright issues – what images / videos / sounds are legal and safe to use. • I know that web sites are not always accurate, and that information should be checked before it is used • I understand some of the risk and rewards involved in publishing online and know how to keep safe • I can recognise the effect that my writing or images may have on others and to respect the ideas and communications of others/ they encounter online • I know that need to have appropriate permission for use of images of friends or those they have found online • I know why privacy matters, and how it relates to online security. • I can review the tools and settings that protect against hackers and other threats. • I can identify and ignore/cancel unwanted advertising and malicious downloads in the form of, popups, video, banners, hyperlinked objects Know that https is used for secure transaction such as on-line banking and identified with a padlock	**Key Skills/Objectives:** • I can use the internet as a tool for research • I can choose the most appropriate search engine for the task, refining as necessary • I can recognise reasons that people might publish inaccurate content and check validity. • I can identify whether a file has copyright or can be legally downloaded and whether these can be used in their own work • I can discuss the differences between an open blog and a forum for a closed community • I understand that you should not publish other peoples' material without their permission • I can explain in simple terms the differences between a network, the internet and the world wide web • I can lead with positivity in online communications.	**Key Skills/Objectives:** • I can explain the differences between a network, the internet and the world wide web • Decide which online communication tool to use to best suit the purpose • I know that computers use IP addresses to identify each other • I use specific vocabulary: server, digital data, binary code, URL • I can explain how search engines work; finding and ranking pages in order • I can use range of sources to check validity and recognise different viewpoints. • Describe possible impact of published content to an audience e.g. the use of advertising Know the meaning of some common website extensions –such as .org, .net, ac, .gov, .co.uk, .fr, .com • Select copyright free images and sounds from sources such as LGFL audio network and google searches • Consider what options there are for being brave and why bringing adults into the conversation is important.

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	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Information Technology	**Key Skills/Objectives** • I can create audio using digital instruments and recordings • I can create/edit an image using a range of 'tools' both on and offline • I can use a keyboard effectively • I can use a word bank for help and use online spelling tools • I can add text to photographs and pictures • I am beginning to explain reasons why I have made choices to a teacher or talk partner • I can save my work to the appropriate location • I am beginning to retrieve my work • I can print work and pictures • I can make a pictogram and understand what it shows • I understand that technology can help to create and edit a range of document styles	**Key Skills/Objectives** • I can create audio using digital instruments and recordings • I can create/edit an image using a range of 'tools' both on and offline including 'undo' and 'redo' • I can word process short pieces of text including the use of formatting tools • I am beginning to explain reasons why I have made choices to a teacher or talk partner • I can save, print, retrieve and edit my work • I can find my work to open or print it • I can use and add to a branching database to find objects using	**Key Skills/Objectives** • I can create and insert music and sounds into presentations and documents • I can create and manipulate digital artwork • I use reasoning about the quality and composition of images • I can perform basic editing on images/video – crop, recolour, resize • I can use numerous design features such as text boxes, borders and WordArt in different layouts and styles • I can use a variety of presentation software to make a sequence of slides • I can add to, sort and search a database • I can interrogate a simple database to answer questions and create charts from the data • I can use a data logger to capture measurements over time • I can create simple bar charts and use them to answer questions	**Key Skills/Objectives** • I can add information and use the 'field' function within a database • I can sort record cards by using field names and use a database to find the answer to simple questions • I can use the search tool find information and search for answers to simple questions. • I can use a branching database to identify objects and add additional objects to an existing branching database • I can select colour, cell size and text appropriately • I can save and retrieve documents from shared areas using sensible names • I can use data loggers to capture information to use over time. • I can use spreadsheet cell references • I can format cells and text appropriately	**Key Skills/Objectives** • I can use 'AND', 'OR', '=<' and '=>' to search a database • I can design questions to search a large database • I can check for accuracy by checking data, using different views, search tools and graphing • I can build and use databases to support my work • I can enter formulae into a spreadsheet and modify the data, (simple calculations + -/ x total) • I can make predictions and changes and check results. • I can use 'SUM' to calculate the total of a set of numbers in a range of cells • I can create graphs and charts from data in a spreadsheet • I can change data in a spreadsheet to answer 'what if...?' questions and check predictions • I can investigate changes in sound / light/temperature levels using data logging, using continuous logging, snapshot functions and logging over time.	**Key Skills/Objectives** • I can copy cells and formulae using copy & paste, and fill across and down • I can display and interpret data selecting bar charts, pie charts, scatter graphs and line graphs appropriately • I can match the information in a spreadsheet to the needs of the audience and present data, with appropriate ranges, labelling axes and title • I can create and amend a spreadsheet to solve a problem through a review of the rules and variables • I can use databases and branching databases to process, interpret, store, and present information for a specific audience, realising the need for accuracy and checking plausibility • I can identify opportunities to use data logging to support my work • I can use data logging devices to investigate changes in the environment over time • I can use graphical information to answer questions and solve simple problems