**Computing**

**Intent:**

A high-quality computing education focuses on computational thinking, developing children’s digital literacy and confidence with a range of digital devices. Children will develop resilience when solving problems working to devise creative solutions. Children will recognise that the skills they learn in computing can be applied within a range of other subjects. Computing also ensures that pupils become digitally literate – able to use, and express themselves and develop their ideas through, information and communication technology. Children will become active participants in a digital world, preparing them for the future workplace.

**Aims:**

* provide a relevant, challenging and enjoyable curriculum in computing for all pupils.
* meet the requirements of the national curriculum programmes of study for computing.
* use computing as a tool to enhance learning throughout the curriculum.
* apply their computing skills and knowledge to their learning in other areas;
* equip pupils with the confidence and capability to use computing throughout their later life.
* develop the understanding of how to use computing safely and responsibly.
* develop computing capability in finding, selecting and using information;
* use computing for effective and appropriate communication

**Unit Planner**

Information Technology around us

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| Year 1Computing systems and networks –Technology around us | Year 2Computing systems and networks –IT around us | Year 3Computing systems and networks – Connecting computers | Year 4Computing systems and networks – The Internet | Year 5Computing systems and networks – Sharing information | Year 6Computing systems and networks – Communication |
| To identify technologyTo identify a computer and its main partsTo use a mouse in different waysTo use a keyboard to type on a computerTo use the keyboard to edit textTo create rules for using technology responsibly | To recognise the uses and features of information technologyTo identify the uses of information technology in the schoolTo identify information technology beyond schoolTo explain how information technology helps usTo explain how to use information technology safelyTo recognise that choices are made when using information technology | To explain how digital devices functionTo identify input and output devicesTo recognise how digital devices can change the way that we workTo explain how a computer network can be used to share informationTo explore how digital devices can be connectedTo recognise the physical components of a network | To describe how networks physically connect to other networksTo recognise how networked devices make up the internetTo outline how websites can be shared via the World Wide Web (WWW)To describe how content can be added and accessed on the World Wide Web (WWW)To recognise how the content of the WWW is created by peopleTo evaluate the consequences of unreliable content | To explain that computers can be connected together to form systemsTo recognise the role of computer systems in our livesTo recognise how information is transferred over the internetTo explain how sharing information online lets people in different places work togetherTo contribute to a shared project onlineTo evaluate different ways of working together online | To identify how to use a search engineTo describe how search engines select resultsTo explain how search results are rankedTo recognise why the order of results is important, and to whomTo recognise how we communicate using technologyTo evaluate different methods of online communication |

Creating media

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| Year 1Digital painting | Year 2Digital Photography | Year 3Stop Frame Animation | Year 4Audio Editing | Year 5Vector Drawing | Year 63D Modelling |
| To describe what different freehand tools doTo use the shape tool and the line toolsTo make careful choices when painting a digital pictureTo explain why I chose the tools I usedTo use a computer on my own to paint a pictureTo compare painting a picture on a computer and on paper | To use a digital device to take a photographTo make choices when taking a photographTo describe what makes a good photographTo decide how photographs can be improvedTo use tools to change an imageTo recognise that photos can be changed | To explain that animation is a sequence of drawings or photographsTo relate animated movement with a sequence of imagesTo plan an animationTo identify the need to work consistently and carefullyTo review and improve an animationTo evaluate the impact of adding other media to an animation | To identify that sound can be digitally recorded:To use a digital device to record sound:To explain that a digital recording is stored as a file:To explain that audio can be changed through editing:To show that different types of audio can be combined and played together:To evaluate editing choices made | To identify that drawing tools can be used to produce different outcomes To create a vector drawing by combining shapesTo use tools to achieve a desired effectTo recognise that vector drawings consist of layersTo group objects to make them easier to work withTo evaluate my vector drawing | To use a computer to create and manipulate three-dimensional (3D) digital objectsTo compare working digitally with 2D and 3D graphicsTo construct a digital 3D model of a physical objectTo identify that physical objects can be broken down into a collection of 3D shapesTo design a digital model by combining 3D objectsTo develop and improve a digital 3D model |

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| Year 1Digital Writing | Year 2Making Music | Year 3Desktop Publishing | Year 4Photo Editing | Year 5Video Editing | Year 6Web page creation |
| To use a computer to writeTo add and remove text on a computerTo identify that the look of text can be changed on a computerTo make careful choices when changing textTo explain why I used the tools that I choseTo compare typing on a computer to writing on paper | To say how music can make us feelTo identify that there are patterns in musicTo describe how music can be used in different waysTo show how music is made from a series of notesTo create music for a purposeTo review and refine our computer work | To recognise how text and images convey informationTo recognise that text and layout can be editedTo choose appropriate page settingsTo add content to a desktop publishing publicationTo consider how different layouts can suit different purposesTo consider the benefits of desktop publishing. | To explain that digital images can be changedTo change the composition of an imageTo describe how images can be changed for different uses To make good choices when selecting different toolsTo recognise that not all images are realTo evaluate how changes can improve an image | To explain what makes a video effectiveTo use a digital device to record videoTo capture video using a range of techniquesTo create a storyboardTo identify that video can be improved through reshooting and editingTo consider the impact of the choices made when making and sharing a video | To review an existing website and consider its structureTo plan the features of a web pageTo consider the ownership and use of images (copyright)To recognise the need to preview pagesTo outline the need for a navigation pathTo recognise the implications of linking to content owned by other people |

Programming

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| Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 |
| AMoving a RobotTo explain what a given command will doTo act out a given wordTo combine forwards and backwards commands to make a sequenceTo combine four direction commands to make sequencesTo plan a simple program To find more than one solution to a problem | ARobot AlgorithmsTo describe a series of instructions as a sequenceTo explain what happens when we change the order of instructionsTo use logical reasoning to predict the outcome of a program (series of commands) To explain that programming projects can have code and artworkTo design an algorithm To create and debug a program that I have written | ASequencing SoundsTo explore a new programming environmentTo identify that commands have an outcomeTo explain that a program has a startTo recognise that a sequence of commands can have an orderTo change the appearance of my projectTo create a project from a task description | ARepetition in shapesTo identify that accuracy in programming is importantTo create a program in a text-based languageTo explain what ‘repeat’ meansTo modify a count-controlled loop to produce a given outcomeTo decompose a task into small stepsTo create a program that uses count-controlled loops to produce a given outcome | ASelection in physical computing To control a simple circuit connected to a computer To write a program that includes count-controlled loopsTo explain that a loop can stop when a condition is metTo explain that a loop can be used to repeatedly check whether a condition has been metTo design a physical project that includes selectionTo create a program that controls a physical computing project | AVariables in gamesTo define a ‘variable’ as something that is changeableTo explain why a variable is used in a programTo choose how to improve a game by using variablesTo design a project that builds on a given exampleTo use my design to create a projectTo evaluate my project |
| BIntroduction to AnimationsTo choose a command for a given purposeTo show that a series of commands can be joined togetherTo identify the effect of changing a valueTo explain that each sprite has its own instructionsTo design the parts of a projectTo use my algorithm to create a program | BAN Introduction to QuizzesTo explain that a sequence of commands has a startTo explain that a sequence of commands has an outcomeTo create a program using a given designTo change a given designTo create a program using my own designTo decide how my project can be improved | BEvents and actions in ProgrammingTo explain how a sprite moves in an existing projectTo create a program to move a sprite in four directionsTo adapt a program to a new contextTo develop my program by adding featuresTo identify and fix bugs in a programTo design and create a maze-based challenge | **B**Repetition in gamesTo develop the use of count-controlled loops in a different programming environmentTo explain that in programming there are infinite loops and count-controlled loopsTo develop a design that includes two or more loops which run at the same timeTo modify an infinite loop in a given programTo design a project that includes repetitionTo create a project that includes repetition | BSelection in QuizzesTo explain how selection is used in computer programsTo relate that a conditional statement connects a condition to an outcomeTo explain how selection directs the flow of a programTo design a program which uses selectionTo create a program which uses selectionTo evaluate my program | B SensingTo create a program to run on a controllable device To explain that selection can control the flow of a programTo update a variable with a user inputTo use an conditional statement to compare a variable to a valueTo design a project that uses inputs and outputs on a controllable deviceTo develop a program to use inputs and outputs on a controllable device |

Data

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| Year 1Grouping Data | Year 2Pictograms | Year 3Branching databases | Year 4Data Logging | Year 5Flat-file databases | Year 6Spreadsheets |
| To label objectsTo identify that objects can be countedTo describe objects in different waysTo count objects with the same propertiesTo compare groups of objectsTo answer questions about groups of objects | To recognise that we can count and compare objects using tally chartsTo recognise that objects can be represented as picturesTo create a pictogramTo select objects by attribute and make comparisonsTo recognise that people can be described by attributesTo explain that we can present information using a computer | To create questions with yes/no answersTo identify the object attributes needed to collect relevant dataTo create a branching databaseTo explain why it is helpful for a database to be well structuredTo identify objects using a branching databaseTo compare the information shown in a pictogram with a branching database | To explain that data gathered over time can be used to answer questionsTo use a digital device to collect data automatically To explain that a data logger collects ‘data points’ from sensors over timeTo use data collected over a long duration to find informationTo identify the data needed to answer questionsTo use collected data to answer questions  | To use a form to record informationTo compare paper and computer-based databasesTo outline how grouping and then sorting data allows us to answer questionsTo explain that tools can be used to select specific dataTo explain that computer programs can be used to compare data visuallyTo apply my knowledge of a database to ask and answer real-world questions | To identify questions which can be answered using dataTo explain that objects can be described using data To explain that formulas can be used to produce calculated dataTo apply formulas to data, including duplicatingTo create a spreadsheet to plan an eventTo choose suitable ways to present data |