St Michael & All Angels Computing Progression of Knowledge 2024/2025

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| **National Curriculum KS1**  Pupils should be taught to:   * understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions * create and debug simple programs * use logical reasoning to predict the behaviour of simple programs * use technology purposefully to create, organise, store, manipulate and retrieve digital content * recognise common uses of information technology beyond school * use technology safely and respectfully, keeping personal information private; identify where to go for help and support when they have concerns about content or contact on the internet or other online technologies. | | | | | |
| Year 1 | Digital Literacy | | Information Technology | | Computer Science |
| E-Safety  *Linked to Education for a Connected World* | Computer Systems & Networks | Creating Media | Data Handling | *Beebots and ScratchJr* |
| **Copyright and ownership**   * I know that the work I create belongs to me. * I can name my work so that others know it belongs to me.   **Health, well-being and lifestyle**   * I can explain rules to keep myself safe when using technology both in and beyond the home.   **Privacy & security**   * I can explain how passwords are used to protect information, accounts and devices. * I can recognise more detailed examples of information that is personal to someone. * I can explain why it is important to always ask a trusted adult before sharing any personal information online, belonging to myself or others. | * Log in and log out means to begin and end a connection with a computer. * A computer and mouse can be used to click, drag, fill and select and also add backgrounds, text, layers, shapes and clip art. * Passwords are important for security and to keep us safe. * To know that technology is something that helps us. * To identify a computer and know the main parts. * To know how to type using a keyboard. * To know you can edit text using a keyboard. | * To know some of the simple graphic design features of a piece of online software. * To make careful choices when painting a digital picture. * To know how to add and remove text on a computer. * To know that the look of text can be changed on a computer. * To know that when we create something on a computer it can be more easily saved and shared than a paper version. | * To label objects * To identify that objects can be counted. * To know it is important to count objects with the same properties. * To compare groups of objects. * To answer questions about groups of objects. | * To understand that a program is a set of commands that a computer can run. * To explain what each button (command) on a Bee-bot does. * To understand that a series of instructions can be given before they are carried out by the Bee-bot. * To know that a sprite can be moved in ScratchJr. * To recognise how to run a command in ScratchJr (press the button) * To know how to combine commands in a program. |

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| Year 2 | Digital Literacy | | Information Technology | | | Computer Science |
| E-Safety  *Linked to Education for a Connected World* | Computer Systems & Networks | Creating Media | Data Handling | | *Bee-bots and ScratchJr* |
| **Copyright and ownership**   * I can recognise that content on the internet can belong to other people. * I can describe why other people’s work belongs to them.   **Health, well-being, and lifestyle**   * I can explain simple guidance for using technology in different environments and settings. * I can say how those rules help anyone accessing online technology.   **Privacy & security**   * I can describe and explain some rules for keeping information private. * I can explain and give examples of what is meant by ‘private’ and ‘keeping things private’. | * To recognise different types of computers used in school. * To identify that a computer is a part of information technology. * To recognise some features of information technology. * To explain how information technology helps us. * To know examples of information technology in school and beyond. | * To know that touch typing is the fastest way to type. * To know that I can make text a different style, size and colour. * To know that “copy and paste” is a quick way of duplicating text. * To understand sound can made using a computer. * To know how to use a computer to create a musical pattern. * To understand the purpose for creating music. | * To recognise that we can count and compare objects using tally charts. * To recognise that objects can be represented as pictures. * To create a pictogram. * To explain that we can present information using a computer. | | * To understand that a series of instructions are a sequence. * To know that instructions can be given in different orders and that this changes the outcomes. * To recognise that you can predict the outcome of a program. * To know that we call error in a program a ‘bug’ and fixing these 'debugging'. |
| **National Curriculum KS2**  Pupils should be taught to:   * design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts * use sequence, selection, and repetition in programs; work with variables and various forms of input and output * use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs * use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content * select, use and combine a variety of software (including internet services) on a range of digital devices to design and create a range of programs, systems and content that accomplish given goals, including collecting, analysing, evaluating and presenting data and information * understand computer networks including the internet; how they can provide multiple services, such as the world wide web; and the opportunities they offer for communication and collaboration. * use technology safely, respectfully, and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact. | | | | | | |
| Year 3 | Digital Literacy | | Information Technology | | Computer Science | |
| E-Safety  *Linked to Education for a Connected World* | Computer Systems & Networks | Creating Media | Data Handling | ***Sequencing*** *in programming* | |
| **Copyright and ownership**   * I can explain why copying someone else’s work from the internet without permission isn’t fair and can explain what problems this might cause.   **Managing online information**   * I can demonstrate how to use key phrases in search engines to gather accurate information online. | * To describe what an input is. * To explain that a process acts on the inputs. * To explain that an output is produced by the process. * To understand that changing the process can affect the output. * To recognise computers can be connected to each other. * To recognise that a network is made up of a number of components. | * To know that animation is a sequence of drawings or photographs in a sequence. * To know that the capturing device needs to be in a fixed position. * To know that small changes in the frames will create a smoother animation. * To understand what onion skinning is. * Explain the difference between text and images. * Consider how different layouts can suit different purposes. * Identify the uses of desktop publishing in the real world. * Understand why desktop publishing might be helpful | * To know that a branching database is a collection of data organised in a tree structure using yes/no or true/false questions. (binary tree) * To explain that a branching database is an identification tool. * To understand that a data set can be structured using yes/no questions. * To explain that a well-structured branching database will enable you to identify objects using fewer questions. * To identify some real-world applications for branching databases. | * To explore a new programming environment (Scratch) * To know that commands have an outcome. * To explain that a program has a start. * To recognise that a **sequence** of commands can have an order. * To know that commands in Scratch are represented as blocks. * To explain how a sprite moves in an existing project. * To build a **sequence** of commands. * To identify and fix bugs in a program. | |

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| Year 4 | Digital Literacy | | Information Technology | | Computer Science |
| E-Safety  *Linked to Education for a Connected World* | Computer Systems & Networks | Creating Media | Data Handling | *Repetition using Logo and Crumble kits.* |
| **Copyright and ownership**   * For content to use, I can explain why I need to consider who owns it and whether I have the right to reuse it. * I can give some examples of content which I must not use without permission from the owner, e.g. videos, music, images.   **Managing Online Information**   * I can analyse information to make a judgement about probable accuracy, and I understand why it is important to make my own decisions regarding content and that my decisions are respected by others. * I can 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. | * To know that the World Wide Web is part of the internet. * To understand that the internet is the global interconnection of networks. * Know we need security on the internet. * To know the World Wide Web is made up of websites and web pages. * To know that the content of the World Wide Web is created, owned, and shared by people. * To understand that there is both reliable and unreliable content on the World Wide Web | * To identify the input and output devices used to record and play sound. * To explain that audio recordings can be edited. * Understand you can combine audio to enhance my podcast project. * To understand that the composition of digital images can be changed. * To know that colours can be changed in digital images. * To know how cloning can be used in photo editing. * To know how to combine images for a purpose. | * Know that computers can use special input devices called sensors to monitor the environment. * To explain that data gathered over time can be used to answer questions. * Use a digital device to collect data automatically. * Explain that a data logger collects ‘data points’ from sensors over time. * Recognise how a computer can help us analyse data. * Use a data logger to collect data. * Interpret data that has been collected using a data logger | * To identify that accuracy in programming is important. * To know how to create a program in a text-based language (Logo). * Explain what ‘repeat’ or **‘repetition’** means in programming. * To know that we can use a loop command in a program to repeat instructions. * To explain that in programming there are indefinite loops and count-controlled loops. * To know that an indefinite loop will run until the program is stopped. * To know that you can program a loop to stop after a specific number of times (count-controlled). * To know when to use a loop and when not to. |

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| Year 5 | Digital Literacy | | Information Technology | | | Computer Science | |
| E-Safety  *Linked to Education for a Connected World* | Computer Systems & Networks | Creating Media | Data Handling | | *Selection in physical computing.*  *Selection in quizzes.* | |
| **Copyright and ownership**   * I can assess and justify when it is acceptable to use the work of others. * I can give examples of content that is permitted to be reused and know how this content can be found online. | * To explain that computers can be connected together to form IT systems. * To know some examples of data that can be transferred between IT systems. * To recognise that search engines are examples of large IT systems. * To know the role of web crawlers in creating an index. * To explain that ranking orders search results to make them more useful. * To explain how search engines make money by selling advertising space. * To know some of the limitations of search engines. | * To know that a video is a visual media format. * To know some features, make videos more effective. * To know how to use a digital device to record a video. * To know that you can capture video with a range of techniques. * To know how to improve a video by reshooting and editing. * To know that my choices, when making a video, will impact the quality of the final outcome. * To know a vector drawing is made of lines and shapes. * To know that each individual element is called an object. * To explain how alignment grids and resize handles can be used to improve consistency. * To understand that each added object creates a new layer in the drawing. | * To know that flat-file database is a collection of data organised in a single table. * To know that the term ‘database’ means ‘a collection of organised data that is stored on a computer’. * To know that a **field** is one specific piece of data in a database record. * To know that a **record** is a set of data on a particular object. A record is formed from one or more ‘fields’ of data. * To know how to compare data in databases. | | * To know how to control a simple circuit connected to a computer. * To know how to write a program that includes count-controlled loops. * To know conditions are statements that need to be met for a set of actions to be carried out. * To explain that a loop can stop when a condition is met. * To explain that a loop can be used to repeatedly check whether a condition has been met. * To know that **selection** in programming are points where a decision must be made when designing a program. | |
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| Year 6 | Digital Literacy | | Information Technology | | | | Computer Science |
| E-Safety  *Linked to Education for a Connected World* | Computer Systems & Networks | Creating Media | | Data Handling | | *Variables- unit linked to Design Technology.*  *Variables- sensing movement Micro:bit.* |
| **Copyright and ownership**   * I can demonstrate the use of search tools to find and access online content which can be reused by others. * I can demonstrate how to make references to and acknowledge sources I have used from the internet.   **Privacy and Security**   * I can describe simple ways to increase privacy on apps and services that provide privacy settings. | * To understand that data is transferred across networks using agreed protocols. (methods) * To know that connections between computers allow access to shared stored files. * To know that data is transferred in packets. * To understand that computer connected to the internet allow people in different places to work together. * To understand that communicating and collaborating on the internet can be public or private. | * To recognise that you can work in three dimensions on a computer. * To identify that digital 3D objects can be modified by resizing, recolouring and lifting/lowering. * To recognise that objects can be combined in a 3D model by rotating, duplicating and grouping. * To know that placeholders can create holes in 3D objects. * To know that different types of media are used on websites. * To know that websites are written in HTML. * To recognise the common features of a web page. * To consider the ownership and use of images (copyright) * To understand the need to preview pages. * To know that navigation paths are the way that pages are linked together. * To be aware of the implications of linking to content owned by other people | | * To know how to create a data set in a spreadsheet. * To explain what an item of data is. * To know that a cell is a box on a spreadsheet. * To explain that formulas can be used to produce calculated data. * To create a formula which includes a range of cells. * To understand why data should be organised. | | * To know that a ‘**variable**’ is something that is changeable. * To know that a variable has a name and a value. * To recognise that the value of a variable can be changed. * To explain that selection can control the flow of a program. * To identify examples of conditions in the real world. * To use a condition to change a variable. * To explain that checking a variable doesn’t change its value. * To use an operand (e.g. <>=) in an if, then statement. * To explain the importance of the order of conditions in else, if statements. * To use a range of approaches to find and fix bugs. |