**Computing Curriculum Map (Key Knowledge)**

\*\**Key Vocabulary isn’t separated out and listed here for each individual topic but should be included on curriculum overviews and individual lesson plans*\*\*

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| **CYCLE B – 2021 - 2022** | | | |  |
| **EYFS** |  |  | | Know ways the internet can be used to communicate.  Recognise that they can say no or please stop to anyone online or offline to somebody who makes them feel sad, uncomfortable, embarrassed or upset. |
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|  | **Computer science: *Programming and Logic*** | **Information Technology:**  ***Recognising, creating and using content*** | **Using the internet:**  ***Searching and sorting*** | **Esafety:**  ***Being careful and considerate*** |
| **Year 1** | Begin to break problems down into smaller steps.  Begin to predict the outcome of a set of commands on a device.  Combine multiple commands to create a simple sequence on a device. (Beebots)  Begin to experiment and find ways to fix (debug)a set of commands/instructions.  Identify the of effect of changing a value (Scratch JNR)  Use an algorithm to create a program. (Scratch JNR)  Compare different programming tools  Find and use commands to move a sprite  Run their program | Know and identify different types of technology around us and how they help us.  Identify a computer and its main parts  Use a mouse in different ways – click and drag, to create a picture, open a program  Use a keyboard to type and begin to edit text.  Know that writing on a computer is called typing.  Save their own file.  Open a given file with support.  Use different shape and line tools and know that they have different jobs.  Create my own picture. (Paintz)  Compare painting a picture on a computer and on paper  Know how to change the colour and brush sizes and make dots of colour on the page. | Begin to access simple websites using given links or through using a search engine. | Know to always tell an adult if they see or read something they don’t like.  Know to never give out personal information.  Begin to know how to handle equipment responsibly and safely. |

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| **Year 2** | **BEEBOTS**  Describe a series of instructions as a sequence  Follow instructions (algorithm) given by someone else.  Give clear and unambiguous instructions (algorithm).  Explain what happens when we change the order of an algorithm.  Create different algorithms for a range of sequences (using the same commands). (Beebots)  Show the difference in outcomes between two sequences that consist of the same commands  Use an algorithm to program a sequence on a floor robot.  Use logical reasoning to predict the outcome of a program (series of commands).  Compare my prediction to the program outcome.  Be able to follow and predict the outcome of a sequence.  Create, identify and test to ensure it is usable.  **SCRATCH JNR**  Design an algorithm to meet a goal  Create and debug a program that I have written by testing and debugging each part of the program.  Know that a program needs to be started and how to start a program.  Explain that a sequence of commands has an outcome.  Know that I can change the outcome of a sequence of commands.  Create a program using a given design by deciding which blocks to use to meet the design.  Improve my project by adding features and debugging. | Recognise the uses and features of information technology in school and beyond  Be able to talk about its purpose and how it helps us. E.g. shop  Identify that a computer is a part of information technology.  Know that information technology can be connected.  Able to move and resize images  Reopen a file  Know what devices can be used to take photographs.  Take a good photograph and explain whether it has been taken in a landscape or portrait format.  Explain what makes a good photograph and identify ways to improve it.  Experiment with different light sources.  Use tools to change an image.  Explain that we can present information using a computer  Use a computer program to present information in different ways. (Maths – pictograms – J2e).  Use a computer to experiment with music e.g. pitch and duration.  Show how music is made from a series of notes using a computer.  Create music for a purpose using a computer. | Know that the internet is made up of content shared by people and organisations for a variety of reasons.  Know that images, video & other content may be shared by adults, older siblings etc - and that they are not yet old enough to do this themselves.  Search for images and appropriate websites linked to work in the wider curriculum. | Know how to use information technology safely and responsibly.  Explain how information technology works in different environments and settings.  Know to ask permission before taking a photo of someone.  Give simple examples of why information should not be shared  Know that games have an age rating.  Explain what personal information is. |

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| **Year 3** | **SCRATCH**  Explore a new programming environment.  Explain that objects in Scratch have attributes.  Identify the objects in a Scratch project (sprites, backdrops).  Recognise that commands in Scratch are represented as blocks.  Choose a word which describes an on-screen action for a design.  Know that the objects in a project will respond exactly to the code.  Show how to start a program in different ways.  Recognise that a sequence of commands can have an order.  Combine sound commands.  Change the appearance of my project.  Create a project from a task description.  Implement an algorithm as code.  Program movement.  Identify and fix bugs in a program.  Design and create a maze-based challenge. | Explain how digital devices function – input and output.  Classify input and output devices.  Recognise how digital devices can change the way we work.  Recognise similarities and differences between using digital devices and non-digital tools.  Create a branching data base that works.  Use text and images to convey information.  Know that animation is a sequence of drawings or photographs  Create an effective flip book-style animation and then a stop frame animation.  Explain why little changes are needed between each frame.  Describe a successful animation.  Use onion skinning to help make small changes between frames.  Review and improve an animation.  Create a magazine front cover using a desktop publishing publication.  Choose layouts to fit a specific purpose.  Recognise that text and images can communicate messages clearly.  Able to change font style, size, and colours for a given purposes.  Know what page orientation means.  Can copy and paste images.  Consider the benefits of desktop publishing and compare it to creating work by hand.  . | Recognise that a computer network is made up of a number of devices.  Identify the benefits of computer networks.  Explain how a computer network can be used to share information.  Discuss why we need a network switch.  Recognise different connections and explain how messages are passed through multiple connections.  Demonstrate how information can be passed between devices.  Explain the role of a switch, server, and wireless access point in a network  Use Google (or similar) to begin  to search for information  Recognise that most searches  will produce huge amount of  results & begin to determine  whether a given page is useful/ | Understand that not all  information shared online is safe  or exists for positive reasons.  Know how to use email and gaming chat forums safely.  Know how to show respect for others online - e.g. asking before posting images / video of others, giving positive feedback.  Know what behaviour is and is not acceptable online. |

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| **Year 4** | *SCRATCH*  Know that accuracy in programming is important  Create a code snippet for a given purpose.  Explain the effect of changing a value of a command  Program a computer by typing commands.  Create a program in a text-based language.  Test my algorithm in a text-based language.  Write an algorithm to produce a given outcome.  Explain what ‘repeat’ means.  Identify everyday tasks that include repetition as part of a sequence, e.g. brushing teeth, dance moves  Identify patterns in a sequence, e.g. ‘step 3 times’ means the same as ‘step, step, step’.  Create and design a program that uses count-controlled loops to produce a given outcome.  Modify a count-controlled loop to produce a given outcome  Identify the effect of changing the number of times a task is repeated  Predict the outcome of a program containing a count-controlled loop.  Decompose a program into parts  Explain that a computer can repeatedly call a procedure.  Develop my program by debugging it.  Design a project that includes repetition.  Modify a snippet of code to create a given outcome.  Explain that in programming there are infinite loops and count controlled loops.  Choose when to use a count-controlled and an infinite loop,  Recognise that some programming languages enable more than one process to be run at once.  Develop a design which includes two or more loops which run at the same time.  Identify which parts of a loop can be changed.  Re-use existing code snippets on new sprites. | Identify that sound can be digitally recorded.  Identify digital devices that can record sound and play it back.  Identify the inputs and outputs required to play audio or record sound.  Use a digital device to record sound:  Discuss what other people include when recording sound for a podcast  Explain that a digital recording is stored as a file and why it is useful to be able to save recordings.  Plan and write the content for a podcast.  Save a digital recording as a file and open a digital recording file.  Explain that audio can be changed through editing and discuss the different ways it can be altered and arranged.  Edit sections of an audio recording.  Show that different types of audio can be combined and played together:  Evaluate editing choices made and discuss the features of a digital recording I like.  Explain that digital recordings need to be exported to share them.  Plan and collect data using a digital device (data logger).  Explain that a data logger collects ‘data points’ from sensors over time automatically.  Explain that sensors are input devices and identify that data from sensors can be recorded.  Use data from a sensor to answer a given question.  Identify a suitable place to collect data.  Identify the intervals used to collect data  Talk about the data that I have captured.  Import a data set  Use a computer program to sort data and view in different ways.  Explain the benefits of using a data logger.  Interpret data that has been collected using a data logger.  Know that digital images can be changed and identify some of these changes.  Explain the effect that editing can have on an image.  Explore how images can be changed in real life.  Change the composition of an image and consider why someone might want to change the composition of an image.  Describe how images can be changed for different uses.  Choose effects to make my image fit a scenario.  Choose appropriate tools to retouch an image.  Give examples of positive and negative effects that retouching can have on an image  Recognise that not all images are real and some are fake.  Combine parts of images to create new images. | Describe how networks physically connect to other networks.  Demonstrate how information is shared across the internet  Describe the internet as a network of networks  Explain why a network needs protecting.  Understand that networked devices make up the internet  Explain how the internet allows us to view the World Wide Web.  Recognise that the World Wide Web is the part of the internet that contains websites and web pages.  Show how websites can be shared via the World Wide Web.  Describe how to access websites on the WWW.  Describe where websites are stored when uploaded to the WWW  Explain the types of media that can be shared on the World Wide Web (WWW).  Describe how content can be added and accessed on the World Wide Web  Create media which can be found on websites.  Explain that new content can be created online and demonstrate this.  Know and understand that the content of the WWW is created by people.  Explain that there are rules to protect content  Identify who owns the content on some websites.  Evaluate the consequences of unreliable content and know that not everything on the internet is true. | Explain why I need to think carefully before I share or reshare content.  Explain why some information I find online may not be honest, accurate, or legal. |