Computing Progression of Knowledge and Skills

Key to understanding this document: Black = National Curriculum objectives Blue = Knowledge Red = Skills to be taught Green = Resources to be used

The learning intentions to be used for the lessons are written next to the lesson codes. E.g. UT1 or UI3

Area of Learning	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Using Technology	I can confidently choose a resource to play with. To be able to show confidence in choosing resources and perseverance in carrying out a chosen activity. I know how to keep trying when I find something difficult. To be able to show resilience and perseverance when faced with a challenge. I know how to safely use smaller objects for small motor skills. To be able to develop their small motor skills so they can use a range of tools competently, safely and confidently.	I know how to use a username and password. UT1: To begin to independently access an iPad e.g. logging on and opening programs following clear instructions. Purple Mash I can use space, enter, full stop key on a keyboard. UT2: To understand the (space, enter, full stop) keys on an iPad keyboard. I know how to take a picture on an iPad and a camera. UT3: To be able to make simple choices about which hardware is most appropriate to use and begin to explain why. Compare iPad & camera through discussion. I know which icons to press in order to change the font and size. UT4: To begin to produce work using an iPad independently or	I know which icons to press in order to save and print. UT1: To confidently access an iPad and save and print on an online platform. Purple Mash I know the position of the keys on a 'QWERTY' keyboard. UT2: To begin to develop familiarity of position of letter keys. Purple Mash I can use the shift key to create a capital letter. UT3: To understand how to use the shift key. I know how to insert a photo before making simple edits. UT4: To be able to make choices about which software is most appropriate to use – Compare: Purple Mash - 2Paint A Picture, simple editing of photos (this can be cross-curricular and only needs to be in 2Paint A Picture program)	I know the position of the keys on a 'QWERTY' keyboard. UT1: To develop typing speed and accuracy to develop competency. Use BBC Dance Mat typing to supplement word processing skills. I can choose which word processing software is more effective. UT2: To be able to make choices about which software or hardware is most appropriate to use and to explain – Google Docs and Purple Mash 2Write I know which icons to press in order to edit work on a word processing software. UT3: To continue to produce work using word processing tools, using more advanced features of programs – Google Apps - Slides, Creating a textbox,	I know that multiple devices can access a document simultaneously. UT1: To use collaborative software padlet and Google Docs. I know which keys to press and hold in order to move text. UT2: To use copy, paste and cut keys to move information. Use shorthand keys too (Ctrl+C, Ctrl+V and Ctrl+Z). Google Docs on a laptop. I know that I need to input data in a table and then select this data to create a chart. UT3 DATA REPRESENTATION*: To use data within spreadsheets to create graphs or present data in different ways – To create a table of data and convert this into an appropriate line or pie chart. Google sheets	I know that specific programs will perform specific tasks better than others. UT1: To compare programs of a similar nature and evaluate which is most effective at performing specific tasks. E.g. Google slides, Google docs, Microsoft Publisher – which is best? I know how to produce a piece of work on different programs and use advanced features to edit my work. UT2: To continue to produce work using a computer, using more advanced features of programs and tools e.g. I can use margin tools and text box links on Microsoft Publisher, bullet points, columns etc. on Google Docs. I know how to create a presentation that include transitions, timings, audio and hyperlinks. UT3: To begin to create documents and	I can produce work considering my target audience using advanced features of a program. UT1: To continue to produce work using a computer, using more advanced features of programs and tools e.g. I can use organisational features, select backgrounds with audience in mind and insert text boxes. Google Docs and Microsoft Publisher I can produce work considering my target audience using advanced features of a program. UT2: To competently create documents and presentations that serve a purpose and suit the needs of an intended audience. I can use organisational features, select backgrounds with audience in mind and insert text boxes. Google Docs, Google Slides or Microsoft PowerPoint

	I can use a simple program on an electronic device. To be able to use ICT hardware to interact with an age appropriate computer software. I can create a video recording, listen to a story and draw a picture on a screen. I know how to access a range of different technology. To be able to develop digital literacy skills by being able to access, understand and interact with a range of technologies.	collaboratively. Purple Mash – 2Publish (English) – 'I have found out' –change colour of font, size and pictures I know that there are many different technologies that we interact with in our day to day lives. UT5: To recognise common uses of information technology beyond school - mobile phones/tablets/games consoles I know that there are many different technologies that we interact with in our day to day lives. UT6: To be able to discuss their use of technology at home – mobile phones, tablets, games consoles	I know how to insert a photo before making simple edits. UT5: To independently use a variety of hardware for different purposes – using an iPad, to take photos and add text on piccollage, 2Simple photo editor, simple editing of photos (this can be cross-curricular and only needs to be in 2Photo program) I know which icons to press in order to make the font bold, italics or underlined. UT6: To begin to produce work using an ipad independently, using simple features of programs and tools – italics, bold, underline Google Apps Slides. I know how to insert a picture and record sound on a presentation. UT7: To begin to develop an understanding of creating presentations to organise ideas – Google Apps Slides pictures and recording sound I know how to collect data and use it to create a simple graph. UT8 DATA	bullet point list, word art, headings I know how to type text, create transitions and change designs/fonts. UT4: To use a wide range of programs to create documents and presentations – Google Docs, Google Slides, creating transitions, designs, fonts I know how to collect data, input it onto a spreadsheet and use it to create a graph. UT5 DATA REPRESENTATION*: To understand the basic structure of a database and to add simple data to a spreadsheet and use information for a bar graph – Google Sheets I can take a photo before manipulating it on an editing software. UT6: To select and manipulate an image using a digital device. Use Pic-Edit on the iPad to manipulate a photograph. I can select sounds and combine them to create a piece of music. UT7: To select and a manipulate sound using	I know how to insert and change images and sounds to create one whole piece of edited digital media. UT4: To select and a manipulate sound and images using a digital device. Use iMovie on the iPad to manipulate sound and images simultaneously. I know how to wire a circuit to create a physical system. UT5: WITHIN SCIENCE To understand how a physical system works. makey makey hardware (linked to electricity topic) To create a physical electrical circuit using a circuit board. UT6: To understand that work can be saved to an online cloud.	presentations using advanced features such as adding / creating audio, hyperlinks, video timings. Microsoft PowerPoint I can highlight data in a spreadsheet and select a formulae to interpret the data. UT4 DATA REPRESENTATION*: To use technology, including spreadsheets, to create graphs and present data in different ways using basic formulae (Sum). *Use data collected in research UI1/2/3*. Google sheets on iPads or Microsoft Excel on laptops. I know how to edit and manipulate an image. UT5: To independently manipulate an image using a complex digital device. Use 'Gimp' on the laptop to manipulate images in a range of ways. *Link to UI4/5/6 work by sending the image as an attachment.* UT6: To understand how a network works with multiple devices accessing the same network. I can save and access work on multiple devices within a secure network.	I can input data into a spreadsheet to analyse and evaluate the results. UT3 DATA REPRESENTATION*: To undertake market research, collecting relevant data, analysing and evaluating before presenting using a suitable software. Google Sheets or Microsoft Excel I know how to manipulate sound using editing tools. UT4: To use complex sound editing technology to manipulate a range of sounds. Use 'Audacity' on a laptop to create and manipulate sound (this could be linked to the Y6 production or Enterprise). I know how to manipulate an image for a purpose and link digital content. UT5: To manipulate an image using Augmented Reality (AR) on a digital device. Use 'Augment' on the iPads to add AR to a photograph or poster (this can be easily applied to the Y6 Enterprise project posters).

			REPRESENTATION*: To create a simple database and graph – Purple Mash – 2Graph I know how to collect data and use it to create a simple graph. UT9 DATA REPRESENTATION*: To recognise the link between collecting data and creating a simple graph Purple Mash – 2Graph I know that there are many different technologies that we interact with in our day to day lives and I can discuss and compare their uses. UT10: To recognise common uses of information technology including at school. – discuss carpark barrier, school entry fobs	a digital device. Use Melody Jams on the iPad to manipulate basic sound.			
Using the Internet	With an adult's help, I can use the internet to find information. To be able to find and retrieve information of interest to the child with adult supervision.	To understand why we use the internet to answer specific questions. UI1: Teacher led discussion using Chrome or Edge I know that webpages are used to find information. UI2:To be able to explore a variety of electronic	I know that some webpages are more useful and have more features than others. UI1: To be able to navigate a simple webpage to find specific information and know that some webpages are more useful than others. Discuss text, images, video and	I know how to locate key information on a provided webpage. UI1: To be able to navigate a webpage and search independently for specific and appropriate information. I know that a web address will only work if it is typed accurately. UI2: To understand a	I know that I need to use specific key words to find specific information. UI1: To be able to navigate a search engine using key search terms. Child friendly search engine e.g. Kidrex. What did the Romans eat? I know that I need to use specific key words to find specific information.	I know that not all website will give me relevant or true information. UI1: To be able to skim read for relevant information and identify the impact of incorrect information or data which may contain irrelevant, bias or implausible data. *Use this data to create spreadsheets etc UT4.*	I know that I need to check multiple sources before believing information found on the internet is correct. UI1: To check plausibility of information, understanding the impact of incorrect information by looking at multiple sources. I can use a search engine and select multiple webpages.

		information – simple webpage I know that emails are a form of electronic communication. UI3: To understand that messages can be sent electronically in a variety of ways – send a class email to another Y1 class	hyperlinks on a variety of webpages. I know that websites have a unique web address and can navigate them using links and buttons. UI2: To understand a website has a unique web address and how to find menu buttons and links. Initial teacher discussion and then exploration by pupils. I know how to compose an effective email and send it. UI3: To understand that messages can be sent electronically in varying ways - send own email to imaginary character on 2Email in Purple Mash, discuss possible electronic communication outside of school and discuss e-safety around text and game chat.	website has a unique web address and understand the need for accuracy. I can accurately copy a web address and type it into an address bar.	UI2: To be able to skim read for relevant information and modify search key words if necessary. Child friendly search engine e.g. Kidrex. What did the Romans eat? UI3: To understand that search results are ranked in order of relevance but may include advertising. I know how to add information, images and links to create a working website. UI4: To begin to create a basic website. Google Sites The site should include the new skills of inserting hyperlinks, print screens and cropping as well as previously learnt skills. I know how to use shortcuts to copy and paste information. UI5: To copy and paste from the internet.	UI2: To understand the issues surrounding copyright. I know how to compose an appropriately worded email. UI3: To share and exchange ideas using electronic communication. Purple Mash 2Email, sharing research with a member of the class. UI4: To understand the safety issues surrounding sending and receiving emails. Purple Mash 2Email. Discuss report to teacher button. I know how to upload an attachment to an email. UI5: To attach documents to an email. Purple Mash 2Email. *Use this as part of photo editing work – attach the photo to the email and send.*	UI2: To understand the issues surround copyright and plagiarism and the importance of acknowledging sources. UI3: To understand that search results are ranked in order of relevance and compare a range of sources to check validity of information. I know that websites are a useful tool to advertise products and that they should be targeted to an audience. UI4: To create a website and analyse its effectiveness. Google Sites to create website in order to advertise enterprise project, production or secondary school website. I can carry out market research in order to help me create an effective website.

Programming & Control **EACH CODING ELEMENT SHOULD INCLUDE: Independent exploration tasks set by the teacher: Ask the children how to make changes to the code independently by using question-based investigations.** **E.g:** How can you make 'x' move faster? How can I make the robot move in a different way? How can I use different variables in order to alter the function of my physical system? **Please make sure answers are recorded in children's JOD books.**		I know that a program needs an algorithm to run. PC1 DECOMPOSTION*: To begin to understand the term algorithm as a set of instructions to control or command a program. ***The above objective will be covered by completing the following compulsory projects:*** 1) PC1a: Program a Bluetooth Beebot (a blubot) to follow a simple command. 2) PC1b: Supplement this learning with the Purple Mash '2Go challenges' and iPad app 'Daisy Dinosaur'.	I know that an algorithm is a precise set of instructions. PC1 DECOMPOSTION*: To understand that an algorithm is a set of instructions to achieve a goal on a program. I know that debugging is a way of solving problems within my code. PC2 LOGIC*: To create and debug (correct errors) in simple programs. I know that certain code will make the physical resource behave in a specific way. PC3 LOGIC*: To be able to use logical reasoning to predict the behaviour of simple programs. ***The above objectives will be covered by complete the following compulsory projects:*** 1) PC123A: Program a Bluetooth Beebot (a blubot) using the iPad app to move in specific way – use block code to create loops and repeat. 2) PC123B: Follow Lego Wedo **'Getting Started' Projects Milo the Space the Science Rover, Milo's Motion Sensor,**	I know that a block code is a visual representation of an algorithm. I know how to debug by make revisions to my block code. PC1 GENERALISATION*: To be able to design, write block code and debug (correct errors) simple algorithms that accomplish specific goals. I know how to add a variable to my block code. I understand the language 'input and output'. PC2: To be able to work with simple variables and some basic forms of input and output. ***The above objectives will be covered by complete the following compulsory projects:*** 1) PC12A: Choose from Lego Wedo **Projects 1-7** (120 minutes each) to build and move a physical system. 2) PC12B: Use iPad app 'Scratch Jr' to create a block code with repeats. This could be linked to the	I know that algorithms can be used to accomplish multiple goals. I know how to confidentially debug my code when I encounter a problem. PC1 GENERALISATION*: To design, write and debug (correct errors) more complex algorithms that accomplish specific goals. I know how to add multiple complex variables to my block code. PC2: To be able to work with an increasing number of variables and forms of input and output. I know how to sequence and use inputs and outputs effectively.PC3 DECOMPOSTION*: To sequence algorithms to enable effective program function. ***The above objectives will be covered by complete the following compulsory projects:*** 1) PC123A: Choose from Lego Wedo **Projects 9, 10, 11, 12, 13, 14, 17, 21, 22, 23 or 24** (120 minutes each) to build and move a	I know how to confidentially write complex algorithms to achieve specific goals in a variety of ways. PC1 PATTERNS*: To continue to design, write and debug (correct errors) more complex algorithms that accomplish specific goals. I know how multiple variables will affect my block code. PC2: To be able to work with an increasing number of variables and forms of input and output. I know how to incorporate inputs and outputs within my algorithm independently. PC3 DECOMPOSTION*: To continue to sequence algorithms and selection in programs in order to control a physical system. ***The above objectives will be covered by complete the following compulsory projects:*** 1) PC123A: Use Scratch to recap learning from previous year. (Use speech, sensor blocks, repeat until/if/when blocks). 2) PC123B: Use knowledge of Scratch	I know that there are different coding languages and can consider their pros and cons. PC1 EVALUATION*: To be able to make choices about which coding language is most appropriate to use and explain why. I know how to confidentially write complex algorithms to achieve specific goals in a variety of ways. PC2 LOGIC*: To continue to design, write and debug (correct errors) more complex algorithms that accomplish specific goals. I know how that problems can be solved using inputs and outputs. PC3 GENERALISATION*: To problem solve using knowledge of variables to see the impact upon inputs and outputs. I know that problems can be solved in a variety of ways and can find the most efficient sequence. PC4 ABSTRACTION*: To create an efficient sequence of algorithms. Ensure children seek to use shortest most efficient way to achieve intended outcome –

			Milo's Tilt Sensor and Collaborating to build a physical resource and create a basic algorithm (Whole Morning Project).	term's topic as you wish. 3) PC12C: Use Hour of Code website to build upon Scratch Jr knowledge, use 1 variable. 4) PC12D: Use Purple Mash 2Code Bubbles on the iPad to transfer coding skills to another gaming platform.	physical system, combining variables for a purpose with a more complex physical resource. 2) PC123b: Use Scratch on the iPad to incorporate speech, sensor blocks, repeat until/if/when blocks.	to use MBlockly on the iPads to control Mbots to follow a specific set of instructions. Move to using the laptop software for controlling Mbots using the same skills. 3) PC123C: On the laptops, use above knowledge to program Ohbots to follow a specific set of instructions.	looping & repeat / repeat until blocks etc ***The above objectives will be covered by complete the following compulsory projects:*** 1) PC1234A: Make the link between coding and block code using the app 'Hopscotch' on the iPads. Class Teachers can use 'scratch' as a starting point to knowledge retrieval practice. 2) PC1234B: Following this, use Python in pieces on the laptop to continue to link coding and block code.
Online Safety	I know what a sensible amount of 'screen time' is. To be able to talk and understand about different factors that keep us healthy.	To be able to use technology safely and respectfully, knowing which personal information should be kept private. To understand that the internet can be used for unkind purposes and know who to tell or what to do if they see something upsetting online – tell a trusted adult or discontinue use To be aware that people online may not be who they say they are. To demonstrate an age-related understanding	To be able to use technology safely and respectfully, keeping personal information private. To have a developed understanding that information communicated online can be public and permanent - sending a text message or chatting on a games console (relevant to your class) To begin to understand the meaning of cyberbullying and know who to tell or what to	To have an understanding that information published online is public and permanent – Discuss WhatsApp or other social media platform relevant to your class To know the meaning of cyberbullying and the forms it can be seen within and know who to tell or what to do if they see something upsetting online e.g. a trusted adult or use block/report features	To have an understanding that information published online is public and permanent and be aware of privacy settings on certain websites/apps. To know the meaning of 'cyberbullying' and how to be an up stander. Know who to tell or what to do if they see something upsetting on line. E.g. a trusted adult or use the report/block features To develop an understanding on why	To have an understanding that information published online is public and permanent and be aware that privacy settings can be changed on websites or apps. To recognise warning signals to identify that someone may not be who they say they are online. E.g. asking for personal information, photos, school, address, phone number. To further understand the digital consent age of 13 is related to sponsored advertising ad what this	To use their understanding that information published online is public and permanent to underpin their use of the internet. To understand how the digital consent age of 13 is relevant to the apps used (relevant to the individual class) To know that privacy settings on websites will affect communicating and collaborating online. To understand which kinds of behaviours constitute cyberbullying

		of E-safety when communicating online. Ensure that this is appropriate to your class e.g. only video chat when an adult is around.	do if they see something upsetting online e.g. a trusted adult or use block/report features. To understand the need for a safe and secure password. To further understand that people online may not be who they say they are. To demonstrate an age-related understanding of E-safety when communicating online. Ensure that this is appropriate to your class e.g. only video chat when you have asked permission	To understand the need for a safe and secure password. To further understand that the internet is a great way to find information and communicate with people but that people online may not be who they say they are. To begin to understand why there are age restrictions on apps and games and that the digital consent age of 13 is related to sponsored advertising and not just the content of the app itself. To demonstrate an age-related understanding of E-safety when communicating online. Ensure that this is appropriate to your class e.g. how to keep safe using apps and games that the class are using.	there are age restrictions within apps/games and that people online may not be who they say are. To further understand the digital consent age of 13 is related to sponsored advertising and not just the content of the app itself and the use of photos on social media. To demonstrate an age-related understanding of E-safety when communicating online. Ensure that this is appropriate to your class e.g. only chat to people online that you know and ensure an adult is around.	entails (explain sponsored advertising and how sponsors use the information) and not just the content of the app itself and the use of photos on social media. To understand which kinds of behaviours constitute cyberbullying and know how to prevent or respond to it e.g. tested adult or report/block features on websites. To demonstrate an age-related understanding of E-safety when communicating online. Ensure that this is appropriate to your class e.g. what videos and photos it is appropriate to upload to social media and only if an adult has given you permission.	and know how to prevent or respond to it e.g. trusted adult or report/block features on websites. To recognise warning signals to identify that someone may not be who they say they are online. E.g. asking for personal information, photos, school, address, phone number. To demonstrate an age-related understanding of E-safety when communicating online. Ensure that this is appropriate to your class e.g. what videos and photos it is appropriate to upload to social media only if an adult has given you permission. Conversation around self-esteem using social media. Dove Real Beauty campaign discussing photo-shopping images: https://www.youtube.com/watch?v=wpM499XhMJQ Photo-shopped image link: https://www.youtube.com/watch?v=17cTgVwfGK4

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Key Vocabulary		algorithm email laptop computer iPad communicate internet login username password keyboard space	*algorithm* debug hyperlink cyberbullying data website save print search online	*algorithm* *debug* input output open software hardware variables	*algorithm* *debug* search engine spreadsheets copy paste cut cloud collaborative	*algorithm* *debug* attachment copyright consent secure network drive folder	*algorithm* *debug* plagiarism plausibility

*** Computational Thinking Vocabulary for Teachers**

DECOMPOSTION	Breaking problems down into parts
LOGIC	Predicting and analysing
PATTERNS	Identifying and using similarities
ABSTRACTION	Getting rid of unnecessary detail
GENERALISATION	Using solutions to other problems and adapting them to solve new problems
ALGORITHMS	Making rules and steps
EVALUATION	Making judgements
DATA REPRESENTAION	Ways to organise, sort and show data