Computing Whole School Sequence

Computer Science

KS1
- Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions **(1)**
- Create and debug simple programs **(2)**
- Use logical reasoning to predict the behaviour of simple programs **(3)**

KS2
- Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts **(1)**
- Use sequence, selection, and repetition in programs; work with variables and various forms of input and output **(2)**
- Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs **(3)**

		EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
(1)		Children understand that you can give 'computers' a set of instructions to complete. Children know how to use a programmable toy by pressing buttons and talking about the movements the toy makes. Without a computer: - PSED – Remember the rules without needing an adult to remind. - UTW – Exploring how things work.	Children understand that an algorithm is a set of instructions used to solve a problem. Children know an algorithm written for a computer is called a program.	Children know how to explain that an algorithm is a set of instructions to complete a task. When designing simple programmes children show an awareness of needing to be precise with their algorithms so that they can be successfully converted into code.	Children know how to turn a simple real-life situation into an algorithm for a programme by deconstructing it into manageable parts e.g. the school day. Children know how to identify an error within their programs that prevents it following the desired algorithm and fix it.	Children's designs show that they are thinking of the required task and how to accomplish this using coding structures for **selection** and **repetition.** Children make more intuitive attempts to debug their own programmes.	Children know how to attempt to write more complex algorithms for programmes by deconstructing them into manageable parts. Children know how to test and debug their programmes as they go, identifying specific lines of code to be debugged.	Children know how to identify the important aspects of a task (abstraction) and then decompose them in a logical way. Children test and debug their programmes as they go, identifying specific lines of code to be debugged.
(2)		From Term 2 Beebots - PSED – to show resilience and perseverance in	Children know how to write their own simple algorithms using practical equipment e.g. beebots. Children know how to work out what is wrong with an algorithm when the steps are out of order or missing. From Term 2 Beebots - PSED – to show resilience and perseverance in Children know that unexpected outcomes are due to the code they have created and can make logical attempts to fix it (debug).	Children know how to create a simple programme that achieves a specific purpose on programmable toys and an online Coding resource. Children know how to identify and correct some errors. They should become familiar with the term 'debug'. Children's program designs display a	Children demonstrate the ability to design and code a program that follows a simple sequence. Children know how to experiment with **repetition/loops** in their programmes, beginning to understand how repetition can be used to avoid repeating commands.	Children's use of repetition effects is becoming more logical and are integrated into their designs. Children understand **if statements** for selection.	Children know how to translate algorithms that include **sequence, selection** and **repetition** into code. Children know how to begin to use **variables** in their programmes and understand what these could be used for.	Children know how to confidently translate algorithms that include **sequence, selection** and **repetition** into code. Children know how to show an understanding of **outputs** such as sound and movement and **inputs** from the users of the programme such as buttons and clicks.

	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	the face of a challenge.		growing awareness for logical steps.				
(3)	• PD – Develop their small motor skills • PSED, MS – Be confident to try new activities and show independence.	Children know how to read pictorial code. Children know how to predict and interpret where the machine will end up at the end of the program.	Children know how to identify the parts of a program that respond to specific events e.g. direction movements, start buttons etc. Children talk about the similarities and differences between floor robots and on screen coding.	Children's designs show they are thinking of a logical structure in achievable steps, using some of the new knowledge e.g. if statements, **repetition,** variables. Children know how to read programmes with several steps and predict the outcome.	Children know how to trace code and use step by step methods to identify errors in code and make logical attempts to correct them.	Children are beginning to think about the structure of their code to make it easier to interpret and debug later.	Children know how to interpret a programme into separate parts and use this to explain the programme.

Information Technology

KS1	KS2
• Use technology purposefully to create, organise, store, manipulate and retrieve digital content (1) • Recognise common uses of information technology beyond school (2)	• 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 (3) • Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content (4) • 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 (5)

	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
(1)	Children will begin to develop an interest in technology by using age-appropriate websites or programs.	Children begin to know how to use a keyboard and mouse using index fingers to type. Children know how to create, name, save and retrieve digital content. Children know how to use a website understand the instruction of the teacher. Children know how to use a camera, to take pictures and to record sound and play it back.	Children begin to follow the 'touch typing' steps. Children know how to confidently organise digital content. Children know how to retrieve their content and manipulate it. Children know how to navigate the web to complete simple searches. Children demonstrate an ability to organise data and conduct simple searches.				

(2)	Children will have discussions about technology and how it is used in and outside of school.	Children know how to discuss how they use technology at home. Children know how to name different ways they use technology. Children understand different methods of communication – emails, forums. Children know the difference between emails and other communications and know that they should only open an email from a known source. Children understand that websites contain pop ups and children are beginning to understand that not everything on the internet is always true.				
(3)				Children know how to discuss the different ways to communicate via the internet. Children understand the uses of the internet. Children know how to use an email correctly.	Children recognise the main component parts of hardware which allow computers to join and form a network. Children's ability to understand the online safety implications associated with the ways the internet can be used to provide different methods of communication is improving.	Children understand the value of computer networks but are also aware of the main dangers. Children recognise what personal information is and can explain how this can be kept safe. Children know how to select the most appropriate form of online communications contingent on audience and digital content.	Children know how to use the internet as a search tool. Children understand and know how to explain in some depth the difference between the internet and the World Wide Web. Children know what a WAN or LAN are and can describe how they can access the internet in school.
(4)				Children know how to search for information on the web in different ways. Children are beginning to understand the ranking systems on search engines.	Children understand the function, features and layout of a search engine. They know how to appraise selected webpages for credibility and information at a basic level.	Children understand the ranking systems on search engines and can explain how it works. Children know how to search with greater complexity or digital content when using a search engine. Children know how to explain in some detail how credible a webpage is and the information it contains.	Children use knowledge of the meaning of different domain names e.g. .co.uk .com etc Children know how to use cross checking strategies to check the validity of information. Children know how to readily apply filters when searching for digital content. Children know how to use critical thinking skills everyday in the use in online communication.

| (5) | | | | | Children know how to use a range of software for similar purposes and discuss which is the most appropriate for a given task.

Children know how to collect information and design and create content from the information.

Children know how to present the information.

Children know how to manipulate and improve digital images. | Children know how to select and use software to accomplish given goals.

Children know how to collect and present data.

Children know how to create linked content using a range of software. | Children know how to analyse and evaluate information on software.

Children know how to edit a film on given software. | Children know how to select, use and combine software on a range of digital devices.

Children know how to use a range of technology for a specific project.

Children make clear connections to the audience when designing and creating digital content. |

Digital Literacy

KS1
- 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.

KS2
- Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contract.

	EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	Children understand how to use technology safely. Children know to ask an adult for help when unsure. Children know how to talk about good/bad choices in real life and discuss how this links to being safe online. PSED – To know and talk about the different factors that support their overall health and well being. To understand sensible amounts of screen time.	Children know how to use technology safely. Children know that they must keep personal information private. Children know to speak to a trusted adult if anyone tries to meet them online. Children know how to follow the school's internet safety rules. Children know that many websites ask for information that is private and know how to handle such requests.	Children know how to use technology respectfully. Children know where to go for help if concerned. Children understand that school rules and home technology rules may differ. Children know that personal information should not be shared online. Children understand that if they put information online it leaves a digital footprint or trail and they need to manage it.	Children know how to use technology respectfully and responsibly and follow the school E Safety Rules. Children know the different ways they could get help if they were concerned. Children understand what computer networks do and how they provide multiple services. Children understand when it is best to use technology and where it adds little or no value. Children understand the need for rules to keep safe online. Children understand that not everything on the internet is true.	Children recognise acceptable and unacceptable behaviour when using technology using the school's E Safety Rules. Children know how to explain the need for rules to keep them safe online. Children know that not everything on the internet is true and can use cross checking to verify information. Children understand that the internet contains inappropriate images or texts and know what to do if they come across these. Children know what to do if they are asked to share personal information.	Children understand that you have to make choices when using technology and that not everything is safe or true. Children understand that there are positive and negative impacts of ICT. Children understand the risks of sharing personal information online. Children know and understand the term 'copyright'. Children understand that cyber bullying can	Children know and can discuss the risks of online use of technology. Children know and can discuss their own personal use of the Internet and the choices they make. Children understand the importance of keeping an adult informed about what you're doing online and how to report concerns. Children understand how they can minimise the risks.

	ELG, PSED, MS – Explain the reasons for rules, knowing right from wrong and try to behave accordingly. ELG, EAaD, CwM – Safely use and explore a variety of materials, tools and techniques.		Children realise that not all websites are equally good sources of information.	Children know that personal information made available online can be seen by other people. Children understand the term cyberbullying and what this means. Children know and can talk about what games the like playing and what good choices are when playing online.	Children understand the term cyberbullying and how to deal with a cyber bullying incident.	happen and how to deal with a situation. Children understand security settings.	Children understand how to manage their own security settings. Children understand that they should not publish other people's pictures without permission. Children understand that content put on the internet is very difficult to remove.