Humber Education Trust Knowledge and Vocabulary Progression Intent Computing

The intention of the Computing curriculum

The computing curriculum will:

- equip pupils to use computational thinking and creativity to understand and change the world.
- make deep links with mathematics, science and design and technology, and provides insights into both natural and artificial systems.
- teach the principles of information and computation, how digital systems work and how to put this knowledge to use through programming.
- build on this knowledge and understanding to ensure pupils are equipped to use information technology to create programs, systems and a range of content.
- enable pupils to become digitally literate able to use, and express themselves and develop their ideas through, information and communication technology at a level suitable for the future workplace and as active participants in a digital world.

What are the key features of 'knowledge-rich' assessment for Computing? At KS 1, the sticky knowledge takes full account of the national curriculum's main characteristics of: Uses of IT beyond school Algorithms **Creating Programs** Using Technology Being Safe Reasoning At KS 2, the sticky knowledge takes full account of the national curriculum's main characteristics of: Search engines **Using Programs** Being Safe Creating programs Developing programs Reasoning Networks There are relatively few assessment statements as these knowledge statements should be what pupils retain forever. In other words, this knowledge is within their long-term memory and will be retained.

Before using technology, children need to be able to login safely and confidently in Year 1 & 2.

Computing: Key Stage 1						
	National curriculum	Year 1	Year 2			
Algorithms	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	 Recognise what an algorithm is. Verbally create one step and two step algorithms. 	Understand that algorithms are used on digital devices (computers and phones).			
		Vocabulary/Guidance notes: Algorithm (instructions) Directions- Forward, backwards, left and right.	 Vocabulary/Guidance notes: Should be able to explain why these instructions need to be clear and concise. Recap on recognising what an algorithm and command is. Digital devices, Algorithms (instructions), Directions- half a turn, quarte of a turn etc 			
Create programs	Pupils should be taught to create and debug simple programs	Create one and two step algorithms to plan a journey for a programmable toy and/ or simple program.	 Create a simple program using a block of instructions (Programmable to moving onto a digital device). Test the simple programme and debug. 			
		Vocabulary/Guidance notes: Command, algorithm	 Vocabulary/Guidance notes: Code (Algorithm/ command), Coder (Someone who creates a programm Block (Group of commands), Bug (an error in the algorithm), Debug (Fixithe error) 			
Reasoning	Pupils should be taught to use logical reasoning to predict the behaviour of simple programs		Predict what the outcome of a simple program will be (logical reasoning)			
			Vocabulary/Guidance notes: Understand what predict means.			
Using technology	Pupils should be taught to use technology purposefully to create, organise, store, manipulate and retrieve digital content.	 Use a range of digital devices confidently (laptop, iPad, chromebook etc) Retrieve information from a website (Could be used to gather information for geography, history and writing). Recognise the save symbol and be able to save work independently. 	 Organise, retrieve and manipulate digital content. Save their work confidently, open it and edit it. 			
		 Vocabulary/Guidance notes: Should be able to find and open their saved document. Create a drawing, painting or picture book. Create, save, search, google, website, internet, chrome 	 Vocabulary/Guidance notes: Retrieve an image and insert into their work (Clipart/ image from ipad of the internet). Create a word/ piece of writing on a digital device. Retrieve, google, internet, chrome, website 			
Uses of IT	Pupils should be taught to recognise common uses of information technology beyond school	Talk about some of the IT uses in their own home.	Know how technology is used in school and outside of school			
*To be taught just before algorithms		Vocabulary/Guidance notes: • Discuss ways to reduce negative impact of digital technology (time limits/breaks etc)	 Vocabulary/Guidance notes: Explore how algorithms are used in a range of digital devices and other technologies such as sat nav, robots and traffic lights etc Technology, algorithms 			
Safe use *Recap start of each lesson and should be specifically taught across the year.	Pupils should be taught to 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.	 Recognise what safe means. Use technology safely Keep personal information private (School, age, address and name). 	 Know where to go for help if concerned (Teachers, Head teacher, online safety coordinator and carers). Recognise what a digital footprint and understand that it never disappeared even when deleted. 			
		Vocabulary/Guidance notes: Understand the dangers of talking to strangers (make link with games consoles). Personal, information, private	Vocabulary/Guidance notes: • Digital footprint			

Computing: Key Stage 2							
		Year 3	Year 4	Year 5	Year 6		
Create programs	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	 write programs that accomplish specific goals 	 give an 'on-screen' algorithm to a character that takes them from A to B 	Identify bugs and problems in an algorithm.	write a program that combines more than one attribute		
		 Vocabulary/Guidance notes: Use algorithms that include Input/output and directional instructions including right angle turns. Algorithms, input, output 		 Vocabulary/Guidance notes: Use of the repeat function to create the most efficient algorithm. Repeats/loops, repeat 	 Vocabulary/Guidance notes: Use of 2 way selection (if statements) and variables to create an algorithm. Variables include if statements. Variables , 'if' statement 		
Develop programs		design a sequence of instructions, including directional instructions	 experiment with variables to control models 	 develop programs that have specific variables identified 	develop a sequenced program that has repetition and variables identified		
	Pupils should be taught to use sequence, selection, and repetition in programs; work with variables and various forms of input and output		 Vocabulary/Guidance notes: Using different instructions within an algorithm, to complete a given task. Variables 	 Vocabulary/Guidance notes: Creating an algorithm that includes variables such as, repeats and loops. loops = a repeat function inside of another repeat function. Repeats, loops 	 Vocabulary/Guidance notes: Creating an algorithm that includes variables such as, repeats and loops, use of if statements. Variables, 'if' statement 		
Reasoning	Pupils should be taught to use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs	Explain how a system works.	 Given a set of instructions, make an accurate prediction and explain why they believe something will happen (linked to programming) 	Evaluate information, reaching conclusions that help inform a variety of future programming.	 design algorithms that use repetition and 2-way selection, including if/then/that. 		
		 Vocabulary/Guidance notes: System, e.g. algorithm to complete a task. Algorithm 			 Vocabulary/Guidance notes: Explain the choices of selection. 2-way selection 		
Networks	Pupils should be taught to understand computer networks incl the internet; how they can provide multiple services, such as the world wide web; and the opportunities they offer for communication and collaboration	Use keywords to effectively complete web searches.	As Year 3	Know how to search for specific information using search engines. Identify which information is useful or not.	• As Year 5		
		Vocabulary/Guidance notes: Search filtering, include, exclude		 Vocabulary/Guidance notes: Use search filtering, e.g. use of "speech marks" for specific keywords. Use of + for must include, use of - for exclude. keywords 			
Search engines	Pupils should be taught to use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content	 collect and present information from a range of sources. 	 select and use software to accomplish given goals 	understand how search results are selected and ranked	be aware that some search engines may provide misleading information		
			 Vocabulary/Guidance notes: Use internet search facilities, copy and paste, combine hardware and software. Search engine, hardware, software, search results 	 Vocabulary/Guidance notes: Understand search results e.g. adverts, popular pages rank higher. 	Vocabulary/Guidance notes: ■ As Year 5		

		Year 3	Year 4	Year 5	Year 6
Using programs	Pupils should be taught to select, use and combine a variety of software (incl 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	combine sequences of instructions and procedures to independently turn devices on and off	Combine hardware and software to create media.	 Collect, analyse and evaluate data and information. present the data collected in a way that makes it easy for others to understand 	
		Vocabulary/Guidance notes: ■ Log in/out, don't save passwords,	 Vocabulary/Guidance notes: Podcast, talking e-book, iMovie, Garageband. 	 Vocabulary/Guidance notes: Use software such as Excel/Sheets, Google Forms. Create data charts/graphs to present information. Software, data 	
Safe use	Pupils should be taught to use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact	 use technology respectfully and responsibly Know different ways they can get help if concerned 	 recognise acceptable and unacceptable behaviour using technology Vocab: Acceptable, unacceptable 	understand that they have to make choices when using technology and that not everything is true and/or safe	Be increasingly aware of the potential dangers in using aspects of IT and know when to alert someone if feeling uncomfortable

Programmes/ resources you could use: Purple Mash, Mr Andrews, Scratch Jnr, Bee-bots, Code Kingdom, Cargo Bot, Daisy the Dinosaur, Code. org, iMovie, Garageband, Book Creator, Podcast (audio recorder).