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:						
Algorithms	Creating Programs		Reasoning	Using Technology	Uses of IT beyond school	Being Safe
At KS 2, the sticky knowledge takes full account of the national curriculum's main characteristics of:						
Creating programs	Developing programs	Reasoning	Networks	Search engines	Using Programs	Being Safe
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, quarter 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 toy-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 programme), **Block** (Group of commands), **Bug** (an error in the algorithm), **Debug** (Fixing the 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 or the internet). • Create a word/ piece of writing on a digital device. • **Retrieve, google, internet, chrome, website**
Uses of IT beyond school *To be taught just before algorithms*	• 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
		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 disappears, 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**

Programmes/ resources you could use: Purple Mash, Mr Andrews, Scratch Jnr, Bee-bots, Code Kingdom, Cargo Bot, Daisy the Dinosaur and Code. org

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	*Pupils should be taught to use sequence, selection, and repetition in programs; work with variables and various forms of input and output*	• 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
			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).