

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:

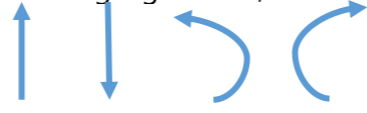

Algorithms ■ Creating Programs ■ Reasoning ■ Using Technology ■ Uses of IT beyond school ■ Being Safe ■

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	<ul style="list-style-type: none"> Recognise what an algorithm is. Verbally create one step and two step algorithms. 	<ul style="list-style-type: none"> Understand that algorithms are used on digital devices (computers and phones see Uses of IT outside of school section).
		<p>Vocabulary/Guidance notes:</p> <ul style="list-style-type: none"> Algorithm (instructions) Directions- Forward, backwards, left and right. 	<p>Vocabulary/Guidance notes:</p> <ul style="list-style-type: none"> 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- Left, right, half a turn, quarter of a turn etc
Create programs	Pupils should be taught to create and debug simple programs	<ul style="list-style-type: none"> Create one and two step algorithms to plan a journey for a programmable toy. Write simple program by writing simple algorithms 	<ul style="list-style-type: none"> Create a simple program using a block of instructions (Programmable toy and moving onto to writing algorithms in blocks). Test the simple programme and debug.
		<p>Vocabulary/Guidance notes:</p> <ul style="list-style-type: none"> Command, algorithm When writing algorithms, children should write using arrows e.g. 	<p>Vocabulary/Guidance notes:</p> <ul style="list-style-type: none"> When writing algorithms, children should write using arrows with numbers to show block e.g.  <ul style="list-style-type: none"> 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		<ul style="list-style-type: none"> Predict what the outcome of a simple program will be (logical reasoning). <p>Vocabulary/Guidance notes:</p> <ul style="list-style-type: none"> Understand what predict means.
Using technology	Pupils should be taught to use technology purposefully to create, organise, store, manipulate and retrieve digital content.	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> Organise, retrieve and manipulate digital content, including the web to complete simple searches. Save their work confidently, open it and edit it.
		<p>Vocabulary/Guidance notes:</p> <ul style="list-style-type: none"> Should be able to find and open their saved document. Create a drawing, painting or picture book. Create, save, search, google, website, internet, chrome 	<p>Vocabulary/Guidance notes:</p> <ul style="list-style-type: none"> 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 <i>*To be taught just before algorithms</i>	Pupils should be taught to recognise common uses of information technology beyond school	<ul style="list-style-type: none"> Talk about some of the IT uses in their own home. 	<ul style="list-style-type: none"> Know how technology is used in school and outside of school
		<p>Vocabulary/Guidance notes:</p>	<p>Vocabulary/Guidance notes:</p> <ul style="list-style-type: none"> 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 <i>*Recap start of each lesson and should be</i>	Pupils should be taught to use technology safely and respectfully, keeping personal information private; identify	<ul style="list-style-type: none"> Recognise what safe means. Use technology safely Keep personal information private (School, age, address and name). 	<ul style="list-style-type: none"> 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.

<i>specifically taught across the year.</i>	<i>where to go for help and support when they have concerns about content or contact on the internet or other online technologies.</i>	<u>Vocabulary/Guidance notes:</u> <ul style="list-style-type: none"> Understand the dangers of talking to strangers (make link with games consoles). Personal, information , private, login/logout, password 	<u>Vocabulary/Guidance notes:</u> <ul style="list-style-type: none"> Digital footprint
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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	<i>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</i>	<ul style="list-style-type: none"> Design a sequence of instructions and write programs that accomplish specific goals. 	<ul style="list-style-type: none"> Design a sequence of instructions and write programs that accomplish specific goals. 	<ul style="list-style-type: none"> Design, write and debug programs with specific goals. Write programs that combines more than one attribute. 	<ul style="list-style-type: none"> Design, write and debug programs with specific goals. Write a program that combines more than one attribute
		<u>Vocabulary/Guidance notes:</u> <ul style="list-style-type: none"> Should start unplugged before moving onto Scratch. Use algorithms that include repetition and directional instructions including right angle turns, half a turn, three quarters of a turn etc. Algorithms, code, sequence, repetition. 	<u>Vocabulary/Guidance notes:</u> <ul style="list-style-type: none"> See Year 3 and use different forms of input (event blocks) and outputs (sound/pen etc) on Scratch Algorithms, code, sequence, repetition, input and output. 	<u>Vocabulary/Guidance notes:</u> <ul style="list-style-type: none"> Use of 2 way selection (if statements) and variables to create an algorithm Algorithms, code, sequence, repetition, input and output 	<u>Vocabulary/Guidance notes:</u> <ul style="list-style-type: none"> Use of 2 way selection (if statements), nested loops and variables to create an algorithm.
Develop programs	<i>Pupils should be taught to use sequence, selection, and repetition in programs; work with variables and various forms of input and output</i>	<ul style="list-style-type: none"> design a sequence of instructions, including directional instructions and repetition. 	<ul style="list-style-type: none"> design a sequence of instructions, including directional instructions, inputs/ outputs and repetition. Begin to use variables. 	<ul style="list-style-type: none"> develop programs that have specific variables identified 	<ul style="list-style-type: none"> develop a sequenced program that has repetition and variables identified
		Algorithms, code, sequence, repetition, input, motion, sprite, block	<u>Vocabulary/Guidance notes:</u> <ul style="list-style-type: none"> Using different instructions within an algorithm, to complete a given task. Algorithms, code, sequence, repetition, input and output, control, variable, sprite, block.	<u>Vocabulary/Guidance notes:</u> <ul style="list-style-type: none"> Creating an algorithm that includes repeats, selection (if, then else statements), variables and degree turns Repeats, selection, decomposition, variable, algorithm, block, sprite. 	<u>Vocabulary/Guidance notes:</u> <ul style="list-style-type: none"> Creating an algorithm that includes variables, turns, repeats and loops, use of if statements. loops = a repeat function inside of another repeat function. See Y5, nested loops (also known as iteration)
Reasoning	<i>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</i>	<ul style="list-style-type: none"> Detect and debug errors. Explain how a system works. 	<ul style="list-style-type: none"> Make an accurate prediction and explain. Use reasoning to predict and explain how algorithms work. 	<ul style="list-style-type: none"> Debug and evaluate programs, reaching conclusions that help inform a variety of future programming. 	<ul style="list-style-type: none"> design algorithms that use repetition and 2-way selection, including if/then, else
		<u>Vocabulary/Guidance notes:</u> <ul style="list-style-type: none"> System, e.g. algorithm to complete a task. Algorithm, bug, debug 	<u>Vocabulary/Guidance notes:</u> <ul style="list-style-type: none"> Algorithm, bug, debug 	<u>Vocabulary/Guidance notes:</u> <ul style="list-style-type: none"> Algorithm, detect, bug, debug 	<u>Vocabulary/Guidance notes:</u> <ul style="list-style-type: none"> Explain the choices of selection. 2-way selection

Networks	<i>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</i>	<ul style="list-style-type: none"> Use services such as email and recognise how they can provide opportunities for communication/ collaboration. 	<ul style="list-style-type: none"> Use keywords to effectively complete web searches. 	<ul style="list-style-type: none"> Know how to search for specific information using search engines. Identify which information is useful or not. 	<ul style="list-style-type: none"> Recognise what the internet consists of. Know LAN and WAN Know how the internet is accessed in school.
		<p>Vocabulary/Guidance notes:</p> <p>Email, compose, communication, CC, address book, attachment, send.</p>	<p>Vocabulary/Guidance notes:</p> <p>Search filtering, include, exclude, search engine, hardware, software, search results, copy/ paste.</p>	<p>Vocabulary/Guidance notes:</p> <ul style="list-style-type: none"> Use search filtering, e.g. use of "speech marks" for specific keywords. Use of + for must include, use of - for exclude. Search filtering (recap), exclude/ include (recap) keywords 	<p>Vocabulary/Guidance notes:</p> <p>Internet, World Wide web, Network, router, network cables, wireless Local area network (LAN) Wide area network (WAN)</p>
Search engines	<i>Pupils should be taught to use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content</i>	<ul style="list-style-type: none"> 	<ul style="list-style-type: none"> collect and present information from a range of sources. select and use software to accomplish given goals 	<ul style="list-style-type: none"> understand how search results are selected and ranked be aware that some search engines may provide misleading information 	
			<p>Vocabulary/Guidance notes:</p> <ul style="list-style-type: none"> Use internet search facilities, copy and paste, combine hardware and software. Search engine, hardware, software, search results 	<p>Vocabulary/Guidance notes:</p> <ul style="list-style-type: none"> Understand search results e.g. adverts, popular pages rank higher. 	

		Year 3	Year 4	Year 5	Year 6
Using programs	<i>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</i>	<ul style="list-style-type: none"> Select and use software. Collect, present and evaluate information. 	<ul style="list-style-type: none"> See Year 3 Explore different software to design and create software, including animation. Present information from a range of sources. Retrieve and manipulate digital images from the web into content. 	<ul style="list-style-type: none"> Combine software on a digital device Create, collect, analyse and evaluate data, information and programs that have a specific goal. Choose appropriate program/ data for task. present the data collected in a way that makes it easy for others to understand 	
		<p>Vocabulary/Guidance notes:</p> <ul style="list-style-type: none"> Log in/out, don't save passwords, Spreadsheet, data, software, cell, columns, rows, move cell, spin, < >, =. branching database, database. 	<p>Vocabulary/Guidance notes:</p> <ul style="list-style-type: none"> Pupils should be making content effective for a specific purpose, thinking carefully about the use of font etc. Animation- stop-motion, frame, onion-skinning, video clip. Spreadsheets- Average, charts, formula, timer, equals, random, formula wizard and See Y3 	<p>Vocabulary/Guidance notes:</p> <ul style="list-style-type: none"> Use software such as Excel/Sheets and other Microsoft programs. Create data charts/graphs to present information. Pupils should look at good examples, evaluate how information is presented to inform their own. Software, data, cell, spreadsheet, average, formula, excel, SUM, * for division and multiplication (Freeze panes- Y6) Concept map- Concept, connection, mode, stage. 	

<p>Safe use</p>	<p><i>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</i></p>	<ul style="list-style-type: none"> • use technology respectfully and responsibly • Know different ways they can get help if concerned 	<ul style="list-style-type: none"> • See Year 3. • recognise acceptable and unacceptable behaviour using technology <p>Vocab: Acceptable, unacceptable, virus, cookies, SPAM, phishing, malware,</p>	<ul style="list-style-type: none"> • Understand that they have to make choices when using technology and that not everything is true and/or safe • Identify and minimize risks. • Identify a range of ways to report concerns. <p>Online safety (recap), plagiarism (recap), identify theft, reference and encryption.</p>	<ul style="list-style-type: none"> • See Year 5 • Be increasingly aware of the potential dangers in using aspects of IT and know when to alert someone if feeling uncomfortable • Digital footprint (recap), spoof, phishing (recap), PEGI rating.
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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).