hi-impact consultancy

Computing Programme of Study: Links to hi-impact Skills

KS1 Computer Science	Year 1		Year 2	
Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions. Create and debug simple programs. Use logical reasoning to predict the behaviour of simple programs.	CS1.1	Be able to say what an 'algorithm' is.	CS2.1	Be able to give control devices instructions that contain numerical data (e.g. move 2 steps etc).
	CS1.2	Be able to use the appropriate keys or commands to make a virtual or floor robot go forward, backward, left and right.	CS2.2	Can use the repeat command (loops) to program more efficiently.
	CS1.3	Be able to program a bot or sprite by giving simple sequences of commands with an immediate outcome.	CS2.3	Can use logical reasoning to predict the outcome of a sequence of instructions and test the sequence, amending if necessary.
	CS1.4	Can use basic symbols to record directional instruction and attempt to identify a bug in their code.	CS2.4	Is able to make use of simple events e.g. mouse clicks/tap on screen.
	CS1.5	Be able to use a developing range of language and styles of control e.g. tilt and turn/instructional to direct a robot.	CS2.5	Be able to find a bug in simple code and attempt to debug errors.

KS1 Digital Literacy	Year 1		Year 2	
Recognise common uses of information technology beyond school. 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.	DL1.1	Be able to access information on the internet and navigate a website using a QR code or links.	DL2.1	Be able to independently navigate to the right information on a website using links or buttons.
	DL1.2	With support, be able to access and view pictures or work via an online platform.	DL2.2	With support, be able to share pictures or work to an online platform.
	DL1.3	Be able to use a search engine or in-app search to search for and save images, using keywords provided by the teacher.	DL2.3	Be able to use a search engine to search for given information, if necessary using keywords provided by the teacher.
	DL1.4	Be able to change options in simulations that represent real or fantasy situations and scenarios to create different outcomes and effects.	DL2.4	Be able to make changes in a model/simulation and use them to make and test predictions.
	DL1.5	Be aware of some of the dangers of online activity and know to tell an adult if they feel something they see online is inappropriate or hurtful.	DL2.5	Be able to explain online danger and begin to be responsible for their actions online, saying what personal information should be kept private.

KS1 Information technology	Year 1		Year 2	
Use technology purposefully to create, organise, store, manipulate and retrieve digital content.	IT1.1	Can produce text, adding and making basic edits to text in appropriate software or app.	IT2.1	When producing text, can add and edit text, considering style, colour, layout and font.
	IT1.2	Be able to explore a range of simple tools within a digital art package, to create and alter the appearance of an image.	IT2.2	Be able to use simple tools within age-appropriate software to create digital art or alter an image, using tools such as crop, resize, and flip, and exploring effects such as symmetry.
	IT1.3	Be able to use simple video or animation software.	IT2.3	Be able to sequence and arrange images and text for a purpose.
	IT1.4	Can use a sound recorder to store information as sound, and create sounds or music by arranging sound markers.	IT2.4	Be able to select and record musical phrases, sound-effects or voice-overs to enhance multimedia work.
	IT1.5	Be able to use suitable on-screen graphing software to represent information using pictographs.	IT2.5	Can make use of different types of graphs (pictographs and bar charts) to represent data collected.

KS2 Computer Science	Year 3		Year 4		Year 5		Year 6	
Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts. Use sequence, selection, and repetition in programs; work with variables and various forms of input and output. Use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs	CS3.1	To sequence a list of commands/ blocks to produce an output e.g. a light comes on or a robot follows a defined route.	CS4.1	Design, test and amend programs to achieve an intended objective, including controlling an external output.	CS5.1	Can use decomposition when solving problems (break the code/problem into smaller parts).	CS6.1	Be able to use logical operations (not, or, and) to alter and control the outcome of a series of commands.
	CS3.2	Is able to use 'repeat' and 'repeat until' loops when appropriate.	CS4.2	Be able to use nested loops to increase the efficiency of a program.	CS5.2	Can explain what happens when a variable changes and can use this within a computer program to manipulate data.	CS6.2	Can use variables efficiently. Be able to create their own variable and use this within a computer program to manipulate data.
	CS3.3	Can use simple conditional statements (if and when commands) and understands the importance of time within a program (e.g. using wait), with support.	CS4.3	Can use and change a pre-written function.	CS5.3	Show an understanding of when to use 'while', 'repeat until' and 'forever if' loops to make programs shorter and more efficient and can use them appropriately (understanding the differences between them).	CS6.3	Can demonstrate an understanding of what subroutines (e.g. functions and procedures) are, and be able to create them within a computer program to store and retrieve data.
	CS34	Can make use of an input 'event' within a simple	CS4.4	Understands a wider range of 'events' such as	CS5.4	Can use and change a pre-written function	CS6.4	Be able to use a wider range of events (such as

		program e.g. when the start button is clicked.		sprite interactions and button presses, and can use them within programs.		as part of a longer program or sequence.		broadcasts) and use them efficiently within programs to start and stop scripts.
	CS3.5	Be able to find errors in a simple program, and successfully debug to make the program work.	**CS4.5**	Be able to find errors in a program of their own design, and successfully debug to achieve a specific goal.	**CS5.5**	Be able to use a greater range of conditionals (selection) including "whilst", "if else", "repeat until".	**CS6.5**	When debugging, can use abstraction to filter out extraneous detail and debug the program.

KS2 Digital Literacy	Year 3		Year 4		Year 5		Year 6	
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 Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact	DL3.1	Be able to identify and use links within a web page to answer questions.	DL4.1	When searching for information online, be able to evaluate how appropriate a website is.	DL5.1	Be able to search the internet for specific information using tools such as Boolean search or Google Advanced Search.	DL6.1	Be able to identify irrelevant, implausible and inappropriate information, when searching for information online.
	DL3.2	Use computer networks, including the world wide web to independently share suitable pictures and work on an online platform.	DL4.2	Use computer networks, including the world wide web, to work collaboratively with others with support.	DL5.2	Use computer networks, including the world wide web, to work collaboratively with others with support. to engage in online communication with teachers and other pupils, making use of a growing range of available features.	DL6.2	Use computer networks, including the world wide web, to work with others to create an online collaborative project for a specific purpose, sharing and appropriately setting permissions for other group members.
	DL3.3	Independently, be able to use a search engine to search for specific information.	DL4.3	Be able to search for and select relevant information (pictures and text) to use in other software, sorting by text, pictures, sound and video.	DL5.3	Be able to search using more than one search term, adapting the search terms to refine search results.	DL6.3	Be able to show an awareness that some media is copyrighted and cannot be used without permission.

	DL3.4	Be able to enter data into a computer simulation, change data and observe changes in results.	**DL4.4**	Be able to explore and predict the effect(s) of changing the variables in digital simulations and observe the results.	**DL5.4**	Be able to use modelling and simulation software to explore or create realistic or fantasy representations of the real world.	**DL6.4**	Be able to use modelling software to explore and create detailed virtual environments or simulations.
	DL3.5	Be aware of some of the consequences of their online actions and be able to explain the importance of balancing game and screen time with other parts of their lives.	**DL4.5**	Be able to identify appropriate behaviour when participating or contributing to collaborative online projects for learning and understand the reasons for using strong passwords.	**DL5.5**	Be able to demonstrate an understanding of responsible social media use, including knowledge of their digital footprint, sharing information and images, and communication with others.	**DL6.5**	Be able to demonstrate an understanding of media bias and strategies for ensuring a balanced view, including gender stereotypes.
			DL4.6	Be aware of ways in which we interact with online communities and be able to suggest and use strategies for dealing with cyberbullying.	**DL5.6**	Be able to demonstrate an understanding of the risks of online gaming and know strategies for healthy online behaviours.	**DL6.6**	Be able to explain how to develop positive online relationships and have strategies to prevent and stop negative situations and manage their private information.

KS2 Information Technology		Year 3		Year 4		Year 5		Year 6
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	IT3.1	Be able to format the text to indicate relative importance, including bold, italic, underline and strikethrough.	IT4.1	Can use a range of features of layout and design such as text boxes, columns and borders, to control the layout and presentation of a document.	IT5.1	Can independently plan and structure the layout of multimedia presentations, drawing on a range of different techniques and styles as appropriate for the task.	IT6.1	Be able to make appropriate use of text and hyperlinks to produce a non-linear presentation or document.
	IT3.2	Be able to select and use appropriate editing tools in an image-editing package for a specific purpose.	IT4.2	Be able to make use of a range of visual effects such as filters, hues, saturation, contrast and combining images to give different effects.	IT5.2	When using digital art software, be able to select and change options within the creation tools to alter the effect or transform an image e.g. line width, opacity, blur, iterations, etc.	IT6.2	Be able to use layers within a digital art package to allow more detailed creation, refining the use of tools to create increasingly purposeful digital artworks.
	IT3.3	Be able to sequence still images, video, audio clips and text to create a video presentation.	IT4.3	Be able to create and add text, video, sound and other graphic effects to a video presentation for an audience, using	IT5.3	Be able to include a range of media in documents or presentations, including images, video and sound, embedded media	IT6.3	Be able to create videos that include greenscreen or animated footage. Edit footage with different effects such as

			editing techniques such as crop and trim.		and hyperlinks.		slow-motion, cutaway, picture in picture.
	IT34	Can locate, record, save and retrieve sounds in multimedia software.	IT4.4	Able to layer sounds using music composition software.	IT5.4	To be able to layer and edit sounds in appropriate sound editing software.	IT6.4	Be able to import sounds into audio editing software, layering and editing to refine their work.
	IT3.5	Be able to use data loggers to collect snapshot information and use information from a given source.	IT4.5	Be able to collect snapshot data from data loggers, selecting the appropriate tool to generate graphs or charts.	IT5.5	With support, be able to organise data by designing fields and entering records in a database, checking for accuracy.	IT6.5	Can export and analyse continuous data from data logging and present in graph form.
	IT3.6	Be able to enter data into a graphing package and use it to create a range of graphs.	IT4.6	Be able to create a branching database to sort and identify objects.	IT5.6	Be able to query a database using keywords and filters to search a large database, for example using 'greater than', 'equal to' and 'contains'.	IT6.6	Can add simple formulae to their own spreadsheets, such as SUM, MAX, MIN and AVERAGE. Enter data and use filters to sort information.
					IT5.7	Understand that spreadsheets perform calculations. Explore the effect of changing the cell values in a pre-prepared spreadsheet.	IT6.7	Can use a spreadsheet to produce bar and pie charts.