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CPS

Creating continuity and progression in Computing

What are the key features of 'knowledge-rich' assessment for Computing?

Subject	Features

Computing	❑ At key stage 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 key stage 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 for ever. In other words, this knowledge is within their long-term memory and will be retained.
	❑ When considering pupils' improvement in subject specific vocabulary, provide pupils with a vocabulary mat which contains all words used for computing for their age group.

Computing: Key Stage 1

	Algorithms	Create programs/ Coding	Reasoning
	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	*Pupils should be taught to create and debug simple programs*	*Pupils should be taught to use logical reasoning to predict the behaviour of simple programs*
Year 1	• emphasise the importance of following instructions • create and follow simple instructions on a computer • consider how the order of instructions affects the results • understand the functionality of basic direction keys • use additional direction keys as part of their algorithm • understand how to change and extend the algorithm list	• understand what coding means • plan a journey for a programable toy • create, store and retrieve digital content • understand the need to test and debug a program repeatedly • provide opportunities for pupils to set challenges for each other • create unambiguous instructions	
Year 2	• gain greater understanding of what an algorithm is • understand how to use the repeat command • understand how to use the timer command • understand that algorithms are used on digital devices	• write a simple program and test it • understand how to create and debug a set of instructions • construct a binary tree to separate different items • using a database to answer more complex search questions • use a search tool to find information	• predict what the outcome of a simple program will be (logical reasoning) • discuss how important it is to think logically • predict what an object will do based on their knowledge of other programs

Computing: Key Stage 1

	Using technology	Uses of IT beyond school	Safe use
	Pupils should be taught to use technology purposefully to create, organise, store, manipulate and retrieve digital content	*Pupils should be taught to recognise common uses of information technology beyond school*	*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*
Year 1	• be familiar with different types of resources available to them • be familiar with a range of icons used on a day-to-day basis • use a website and a camera • record sound and play back • be introduced to 'ebooks' and '2create' a story • add sound to a story including voice recording • be introduced to a spreadsheet	• walk around the local area to find examples of where technology is used • talk about some of the IT uses in their own home	• use technology safely • keep personal information private • log in safely • introduce the idea of ownership and how to look after personal information • know how to find save work online
Year 2	• understand that programs require precise instructions • organise, retrieve and manipulate digital content • introduce email as a communication tool • using technology to make music to include editing and combining sounds • upload sound from a bank of sounds • record a piece of music they have created • use technology to create art based on famous artists studied • create spreadsheets to add amounts and to create tables, including block graphs	• know how technology is used in school and outside of school	• know if something online is making them feel sad or concerned • know where to go for help if concerned • know how to refine searches using the search tool • know how to share work electronically taking account of online safety • Understand that information online leaves a digital footprint or trail

Computing: Key Stage 2

	Create programs	Develop programs	Reasoning	Networks
	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	*Pupils should be taught to use sequence, selection, and repetition in programs; work with variables and various forms of input and output*	*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*	*Pupils should be taught to 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*
Year 3	• write programs that accomplish specific goals • be familiar with and review coding vocabulary • create a sequential program design • design and write a program that simulates a physical system • create a program that repeats actions indefinitely • Explore the use repeat command	• design a sequence of instructions, including directional instructions • Look at a grid that underlines the design and relate this to X and Y properties • introduce selection into their programming by introducing the *if* command • understand what a variable is • understand the need to test and debug a program repeatedly	• discern when it is best to use technology and where it adds little or no value	• navigate the web to complete simple searches • consider different methods of communicating electronically • open and respond to an email to include an attachment (if necessary) and send it to the correct address • use typing terminology • know how to sit appropriately at a keyboard
Year 4	• give an 'on-screen' robot specific instructions that takes them from A to B • create a program with a character that repeats actions • make timers and counting machines using variables to print a new number to the screen every second	• experiment with variables to control models • program a character to respond to user keyboard input • explore how '2Code' can be used to investigate control by creating a simulation	• make an accurate prediction and explain why they believe something will happen (linked to programming)	• know how to search for specific information and know which information is useful and which is not • know what decomposition and abstraction are in computer science

Computing: Key Stage 2

	Search engines	Using programs	Safe use
	Pupils should be taught to use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content	*Pupils should be taught to 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*	*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*
Year 3	• use a range of software for similar purposes • collect and present information	• understand what computer networks do and how they provide multiple services • add and edit data in a table layout • know how spreadsheet programs can automatically create graphs to analyse • Introduce 'more than', 'less than', and 'equals' tools	• use technology respectfully and responsibly • know different ways they can get help, if concerned • consider what constitutes a safe password • be aware of the consequences of giving a password away • consider that not all websites are necessary providing accurate information • create spoof websites • respect age restrictions symbols and appreciate why they exist
Year 4	• select and use software to accomplish given goals • explore how the numbers entered into cells in spreadsheets can be set to either currency, decimal or fraction	• produce and upload a podcast • use a sketch or storyboard to represent a program design and algorithm • use the 'Repeat Until' command to make characters repeat actions • discuss what makes a good animated film or cartoon and what their favourites are • use and build procedures in Logo • use the Repeat function in Logo to create shapes. • explore how font size and style can affect the impact of a text • use a simulated scenario to produce a news report	• recognise acceptable and unacceptable behaviour using technology • understand how they can protect themselves from online identity theft • Identify the risks and benefits of installing software including apps. • understand that copying the work of others and presenting it as their own is called 'plagiarism' and to consider the consequences of plagiarism • identify the positive and negative influences of technology on health and the environment

Computing: Key Stage 2

	Create programs	Develop programs	Reasoning	Networks
	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	*Pupils should be taught to use sequence, selection, and repetition in programs; work with variables and various forms of input and output*	*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*	*Pupils should be taught to 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*
Year 5	• use technology to control an external device • design and write a program that simulates a physical system • create a playable, competitive game • create a program to inform others	• develop a program that has specific variables identified • combine the use of variables, If/else statements and Repeats to achieve the desired effect in code • explore the effect of moving points when designing • understand designing for a purpose	• analyse and evaluate information reaching a conclusion that helps with future developments • understand the need for visual representation when generating and discussing complex ideas	• review sources of support when using technology • explain that computers can be connected to form systems • recognise the role of computer systems in our lives • recognise how information is transferred over the internet
Year 6	• write a program that combines more than one attribute • design programs using their choice of objects attributing specific actions to each • debug a program and organise codes into tabs • organise the code into functions • create picture based quizzes for younger audiences	• develop a sequenced program that has repetition and variables identified • find out what text adventure is and plan a story adventure • introduce map-based texts and adding code to it.	• design algorithms that use repetition and 2-way selection • design a quiz that requires the player to search a database	• find out what a LAN and a WEN are • know and understand how the school accesses the internet • know that the digital world is still at an embryonic stage and will continue to develop

Computing: Key Stage 2

	Search engines	Using programs	Safe use
	Pupils should be taught to use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content	*Pupils should be taught to 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*	*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*
Year 5	• understand how search results are selected and ranked • use formulae within a spreadsheet to convert measurements of length and distance • search the Internet with a consideration for the reliability of the results of sources to check validity and understand the impact of incorrect information	• combine sequences of instructions and procedures to turn devices on and off • review coding vocabulary • use a sketch or storyboard to represent a program design and algorithm • understand and use the correct vocabulary when creating a concept map • read code so that it can be adapted, personalised and improved • explore the launch command and use buttons within a program that launch other programs or open websites • use formulae within a spreadsheet to convert measurements of length and distance	• understand that they have to make choices when using technology and that not everything is true and/or safe • gain a greater understanding of the impact that sharing digital content can have • review pupils' responsibility to one another in their online behaviour • know how to maintain secure passwords • understand the advantages, disadvantages, permissions and purposes of altering an image digitally and the reasons for this • aware of appropriate and inappropriate text, photographs and videos and the impact of sharing these online
Year 6	• identify how to use a search engine • be aware that some search engines may provide misleading information • Identify secure sites by looking for privacy seals of approval, e.g., https, padlock icon • explain how search results are ranked and suggest some of the criteria used to do this • recognise the role of web crawlers in creating an index	• present the data collected in a way that makes it easy for others to understand • use variables within a game to keep track of the properties of objects • use functions and understand why they are useful	• increasingly aware of the potential dangers in using aspects of IT and know when to alert someone if feeling uncomfortable • Identify benefits and risks of mobile devices, broadcasting the locational of user/ devices, apps accessing location • Identify the benefits and risks of giving personal information and device access to different software. • Review the meaning of digital footprint ad understand how and why people use their information and online presence to create a virtual image of themselves as a user. • Know how to behave appropriately online. • Know how information online ca persist and give away details of those who share and modify it.