



Progression of Knowledge and Skill in Computer Science

To knowledge, Skills and Understanding breakdown for Computer Science

	Using the Internet Safely	Communicating	Algorithms and Programs	Technology in Our Lives	Presentation
EYFS					
Year 1	<ul style="list-style-type: none"> To know they must tell a trusted adult immediately if anyone tries to meet them via the internet. To follow the school's safer internet rules To use the search engines agreed by the school To act if they find something inappropriate online or something they are unsure of (including identifying people who can help; minimising screen; online reporting using school system etc). To use the internet for learning and communicating with others, making choices when navigating through sites. To use a password to access the secure network Please ensure online safety is referred to in every online lesson. Also see supporting progression documents for further coverage and lesson ideas 	<ul style="list-style-type: none"> To develop basic skills through typing and formatting text To use the web to find and select images To develop skills in combining text and images To discuss work and decide where work could be improved To know that websites sometimes include pop-ups that take them away from the main site To know that it is not always possible to copy some text and pictures from the internet. To know that personal information should not be shared online 	<ul style="list-style-type: none"> To create a simple series of instructions - left and right. To record their routes. To understand forwards, backwards, up and down. To put two instructions together to control a programmable toy. To begin to plan and test a Bee-bot journey. To be able to solve problems, including debugging, when creating an algorithm 	<ul style="list-style-type: none"> To identify uses of technology in the classroom, at home and in the local area. To talk about using the Internet and using resources on the local device. To explore simple information sources including age appropriate websites To recognise what an email address looks like. To join in sending a class email. To be able to use the @ key and type an email address. To be able to print out a page from the internet. 	<ul style="list-style-type: none"> To be able to word process ideas using a keyboard. To be able to word process ideas using a keyboard. To be able to use the spacebar, back space, enter, shift and arrow keys. To use the spacebar, back space, enter, shift and arrow keys. To be able to capture images with a camera. To be able to print out a photograph from a camera with help. To be able to record a sound and play it back. To be able to enter information into a template to make a graph. To be able to talk about the results shown on a graph.
Year 1 (Challenge)	To record pupils' voices as a voice over. To use a teacher prepared photo story to create a slideshow of photos. To understand algorithms as sequences of instructions or sets of rules in everyday contexts. To recognise that common sequences of instructions or sets of rules can be thought of as algorithms.				



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Year 2	<ul style="list-style-type: none"> To know that personal information should not be shared online. To be able to follow the school's safer internet rules. To be able to use the search engines agreed by the school. To be able to act if they find something inappropriate online or something they are unsure of (including identifying people who can help; minimising screen; online reporting using school system etc). To be able to use the internet for learning and communicating with others, making choices when navigating through sites. To be able to send and receive email as a class. To be able to recognise advertising on websites and learn to ignore it. To explain why online services have terms and conditions that govern their use and impact on the user, e.g. age restrictions To be able to use a password to access the secure network. <p><i>*Please ensure online safety is referred to in every online lesson. *Also see supporting progression documents for further coverage and lesson ideas</i></p>	<ul style="list-style-type: none"> To be able to understand the different methods of communication (e.g. email, online forums etc). To know you should only open email from a known source. To know the difference between email and communication systems such as blogs and wikis. To know that websites sometimes include pop-ups that take them away from the main site. To know that bookmarking is a way to find safe sites again quickly. To be able to begin to evaluate websites and know that everything on the internet is not true. To know that it is not always possible to copy some text and pictures from the internet. To know they must tell a trusted adult immediately if anyone tries to meet them via the internet. To search for information within a single site. To use browser-specific tools (e.g. the Find command) and site-specific tools (such as the search tools for Wikipedia or YouTube) to locate particular information on a web page or within a website. To understand that search engines select pages according to keywords found in the content. To demonstrate their understanding that the pages shown include the keywords they have specified To understand that can be used to in online searches 	<ul style="list-style-type: none"> To predict the outcomes of a set of instructions. To use right angle turns. To use the repeat commands to create a sequence. To test and amend a set of instructions. To write a simple program and test it. To predict what the outcome of a simple program will be. 	<ul style="list-style-type: none"> To understand why/how we use technology in the classroom. To identify and explain how we use technology in my home and community. To understand that other people have created the information I use. To identify benefits of using technology including finding information, creating and communicating. To talk about the differences between the Internet and things in the physical world 	<ul style="list-style-type: none"> To send and reply to messages sent by a safe email partner (within school). To word process a piece of text. To insert/delete a word using the mouse and arrow keys. To highlight text to change its format (B, U, I). To find information on a website. To click links in a website. To print a web page to use as a resource. To experiment with text, pictures and animation to make a simple slide show, including audio and transitions.
Year 2 (Challenge)	To create a presentation in a small group and record the narration. To record sounds into software and playback. To insert prerecorded sounds into a presentation. To capture still and moving images.				



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	Using the Internet Safely	Communicating and Computer Networks	Algorithms and Programs	Databases	Presentation
Year 3	<ul style="list-style-type: none"> To recognise there may be people online who could make someone feel sad, embarrassed or upset and give examples when and how to speak to an adult To find relevant information by browsing a menu. To search for an image, then copy and paste it into a document. To use 'Save picture as' to save an image to the computer. To copy and paste text into a document. To be able to begin to use note making skills to decide what text to copy. <p><i>*Please ensure online safety is referred to in every online lesson.</i></p> <p><i>*Also see supporting progression documents for further coverage and lesson ideas</i></p>	<ul style="list-style-type: none"> To use the email address book. To open and send an attachment. To understand what computer networks including the internet To understand 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. 	<ul style="list-style-type: none"> To experiment with variables to control models. To use 90 degree and 45 degree turns. To give an on-screen robot directional instructions. To draw a square, rectangle and other regular shapes on screen, using commands. To write more complex programs. 	<ul style="list-style-type: none"> To input data into a prepared database. To sort and search a database to answer simple questions. To use a branching database. 	<ul style="list-style-type: none"> To create a presentation that moves from slide to slide and is aimed at a specific audience. To combine text, images and sounds and show awareness of audience. To be able to know how to manipulate text, underline text, centre text, change font and size and save text to a folder. To review images on a camera and delete unwanted images. To understand how to download images from a camera into files on the computer. To use photo editing software to crop photos and add effects. To manipulate sound when using simple recording story boarding.
Year 3 (Challenge)	To search by keyword using a child friendly search engine. To bookmark a page into your favourites. To contribute to a class blog. To use repeat command in logo to create a pattern.				

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Year 4	<ul style="list-style-type: none"> To understand the need for rules to keep them safe when exchanging learning and ideas online. To recognise that information on the internet may not be accurate or reliable and may be used for bias, manipulation or persuasion. To understand that the internet contains fact, fiction and opinion and begin to distinguish between them. To use strategies to verify information, e.g. cross-checking. To understand the need for caution when using an internet search for images and what to do if they find an unsuitable image. To understand that copyright exists on most digital images, video and recorded music. To understand the need to keep personal information and passwords private. To use a search engine to find a specific website. To use note-taking skills to decide which text to copy and paste into a document. To use tabbed browsing to open two or more web pages at the same time. To open a link to a new window. To open a document (PDF) and view it. <p>*Please ensure online safety is referred to in every online lesson. *Also see supporting progression documents for further coverage and lesson ideas</p>	<ul style="list-style-type: none"> To be able to appreciate the benefits of ICT to send messages and to communicate. To use the automatic spell checker to edit spellings. To access different parts of a device, the school network and online to store information. To identify different ways of using technology to communicate with others and the responsibilities of users To create a class Wiki which links collaborative content. 	<ul style="list-style-type: none"> To use repeat instructions to draw regular shapes on screen, using commands. To experiment with variables to control models. To make turns specifying the degrees. To give an on-screen robot specific directional instructions that takes them from x to y. To make accurate predictions about the outcome of a program they have written. 	<ul style="list-style-type: none"> To input data into a prepared database. To sort and search a database to answer simple questions. To be able to recognise what a spread sheet is. To use the terms 'cells', 'rows' and 'columns'. To enter data, highlight it and make bar charts. 	<ul style="list-style-type: none"> To create a lengthy presentation that moves from slide to slide and is aimed at a specific audience. To insert sound recordings into a multi media presentation. To be able to know how to manipulate text, underline text, centre text, change font and size and save text to a folder. To capture images using webcams, screen capture, scanning, visualiser and internet. To choose images and download into a file. To download images from the camera into files on the computer. To copy graphics from a range of sources and paste into a desktop publishing program.
Year 4 (Challenge)	To use photo editing software to crop photographs and add effects. To copy and paste the graph/bar chart and use it in a WP document. To use animation in their presentation.				
To knowledge, Skills and Understanding breakdown for Computer Science					
	Using the Internet Safely	Communicating and Computer Networks	Algorithms and Programs	Databases	Presentation
Year 5	<ul style="list-style-type: none"> To discuss the positive and negative impact of the use of ICT in their own lives and those of their peers and family. To understand the potential risk of providing personal information online. To recognise why people may publish content that is not accurate and understand the need to be critical evaluators of content. To understand that some websites and/or pop-ups have commercial interests that may affect the way the information is presented. To recognise the potential risks of using internet communication tools and understand how to minimise those risks (including scams and phishing). To use a search engine using keyword searches. To compare the results of different searches. To decide which sections are appropriate to copy and paste from at least two web pages. To save stored information following simple lines of enquiry. To download a document and save it to the computer. <p>*Please ensure online safety is referred to in every online lesson.</p>	<ul style="list-style-type: none"> To use instant messaging to communicate with class members. To conduct a video chat with someone elsewhere in the school or in another school. To understand and explain what the internet is To explain what an IP address 	<ul style="list-style-type: none"> To combine sequences of instructions and procedures to turn devices on or off. To be able to understand input and output. To use an ICT program to control an external device that is electrical and/or mechanical. To use ICT to measure sound or light or temperate using sensors. To explore 'What if' questions by playing adventure or quest games. To write programs that have sequences and repetitions. To understand automation. <p>To understand how to use Events Create and write a program which allows a user to interact</p>	<ul style="list-style-type: none"> To create a formula in a spreadsheet and then check for accuracy and plausibility. To search databases for information using symbols such as = > or <. To create databases planning the fields, rows and columns. To create graphs and tables to be copied and pasted into other documents. 	<ul style="list-style-type: none"> To use a range of presentation applications. Do they consider audience when editing a simple film. Do they know how to prepare and then present a simple film. To use ICT to record sounds and capture both still and video images. To make a home page for a website that contains links to other pages. To capture sounds, images and video. To use the word count tool to check the length of a document. To use bullets and numbering tools. To listen to streaming audio- online radio. To download and listen to podcasts. To produce and upload a podcast. To manipulate sounds using Audacity. To select music from open sources and incorporate it into multimedia presentations. To work on simple film editing.



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	<p><i>*Also see supporting progression documents for further coverage and lesson ideas</i></p>				
Year 5 (Challenge)	<p>To make a multimedia presentation that contains: sound; animation; video and buttons to navigate. To save an image document as a gif or i peg. file format using the 'save as' command. To make an information poster using graphics skills to good effect.</p>				
Year 6	<ul style="list-style-type: none"> To follow the school's safer internet rules. To make safe, informed choices about use of technology. To use technology in ways which minimises risk, e.g. responsible use of online discussions, etc. To create strong passwords and manage them so that they remain strong. To independently, and with regard for e-safety, select and use appropriate communication tools to solve problems by collaborating and communicating with others within and beyond To competently use the internet as a search tool. To reference information sources. To use appropriate strategies for finding, critically evaluating, validating and verifying information, e.g. using different keywords, skim reading to check relevance of information, cross checking with different websites or other non ICT resources. To use knowledge of the meaning of different domain names and common website extensions (e.g. .co.uk; .com; .ac; .sch; .org; .gov; .net) to support validation of information. <p>*Please ensure online safety is referred to in every online lesson. *Also see supporting progression documents for further coverage and lesson ideas</p>	<ul style="list-style-type: none"> To conduct a video chat with people in another country or organisation. To contribute to discussions online. To use a search engine using keyword searches. To use complex searches using such as '+' 'OR' "Find the phrase in inverted commas". 	<ul style="list-style-type: none"> To explain how an algorithm works. To detect errors in a program and correct them. To use an ICT program to control a number of events for an external device. To use ICT to measure sound, light or temperature using sensors and interpret the data. To explore 'what if' questions by planning different scenarios for controlled devices. To use input from sensors to trigger events. To check and refine a series of instructions. 	<ul style="list-style-type: none"> To collect live data using data logging equipment. To identify data error, patterns and sequences. To use the formulae bar to explore mathematical scenarios. To create their own database and present information from it. 	<ul style="list-style-type: none"> To present a film for a specific audience and then adapt same film for a different audience. To create sophisticated multimedia presentation. To confidently choose the correct page set up option when creating a document. To confidently use text formatting tools, including heading and body text. To use the 'hanging indent' tool to help format work where appropriate (e.g. a play script). To explore the menu options and experiment with images (colour effects, options, snap to grid, grid settings etc.). To add special effects to alter the appearance of a graphic. To 'save as' gif or i peg. wherever possible to make the file size smaller (for emailing or downloading).
Year 6 (Challenge)	<p>To incorporate graphics where appropriate, using the most effective text wrapping formats. To conduct a video chat with more than one person at a time. To compare the information provided on two tabbed websites looking for bias and perspective.</p>				

Alongside discret Internet Safety units, online safety will be woven into every computing lesson. Progression could be as follows:

Online-safety in Key Stage 1	
Knowledge & understanding	Skills



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| <ul style="list-style-type: none"> • To understand the different methods of communication (e.g. email, online forums etc). • To know you should only open email from a known source. • To know the difference between email and communication systems such as blogs and wikis. • To know that websites sometimes include pop-ups that take them away from the main site. • To know that bookmarking is a way to find safe sites again quickly. • To begin to evaluate websites and know that everything on the internet is not true. • To know that it is not always possible to copy some text and pictures from the internet. • To know that personal information should not be shared online. • To know they must tell a trusted adult immediately if anyone tries to meet them via the internet. | <ul style="list-style-type: none"> • To follow the school's safer internet rules. • To use the search engines agreed by the school. • To act if they find something inappropriate online or something they are unsure of (including identifying people who can help; minimising screen; online reporting using school system etc). • To use the internet for learning and communicating with others, making choices when navigating through sites. • To send and receive email as a class. • To recognise advertising on websites and learn to ignore it. • To use a password to access the secure network. |
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Online-safety in Years 3 and 4

Knowledge & understanding

- To understand the need for rules to keep them safe when exchanging learning and ideas online.
- To recognise that information on the internet may not be accurate or reliable and may be used for bias, manipulation or persuasion.
- To understand that the internet contains fact, fiction and opinion and begin to distinguish between them.
- To use strategies to verify information, e.g. cross-checking.
- To understand the need for caution when using an internet search for images and what to do if they find an unsuitable image.
- To understand that copyright exists on most digital images, video and recorded music.
- To understand the need to keep personal information and passwords private.
- To understand that if they make personal information available online it may be seen and used by others.
- To know how to respond if asked for personal information or feel unsafe about content of a message.
- To recognise that cyber bullying is unacceptable and will be sanctioned in line with the school's policy.
- To know how to report an incident of cyber bullying.
- To know the difference between online communication tools used in school and those used at home.
- To understand the need to develop an alias for some public online use.
- To understand that the outcome of internet searches at home may be different than at school.

Skills

- To follow the school's safer internet rules.
- To recognise the difference between the work of others which has been copied (plagiarism) and re-structuring and re-presenting materials in ways which are unique and new.
- To begin to identify when emails should not be opened and when an attachment may not be safe.
- To explain how to use email safely.
- To use different search engines.

Online-safety in Years 5 and 6

Knowledge & understanding

Skills



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| <ul style="list-style-type: none">• To discuss the positive and negative impact of the use of ICT in their own lives and those of their peers and family.• To understand the potential risk of providing personal information online.• To recognise why people may publish content that is not accurate and understand the need to be critical evaluators of content.• To understand that some websites and/or pop-ups have commercial interests that may affect the way the information is presented.• To recognise the potential risks of using internet communication tools and understand how to minimise those risks (including scams and phishing).• To understand that some material on the internet is copyrighted and may not be copied or downloaded.• To understand that some messages may be malicious and know how to deal with this.• To understand that online environments have security settings, which can be altered, to protect the user.• To understand the benefits of developing a 'nickname' for online use.• To understand that some malicious adults may use various techniques to make contact and elicit personal information.• To know that it is unsafe to arrange to meet unknown people online.• To know how to report any suspicions.• To understand they should not publish other people's pictures or tag them on the internet without permission.• To know that content put online is extremely difficult to remove.• To know what to do if they discover something malicious or inappropriate. | <ul style="list-style-type: none">• To follow the school's safer internet rules.• To make safe choices about use of technology.• To use technology in ways which minimises risk, e.g. responsible use of online discussions, etc.• To create strong passwords and manage them so that they remain strong.• To independently, and with regard for e-safety, select and use appropriate communication tools to solve problems by collaborating and communicating with others within and beyond school.• To competently use the internet as a search tool.• To reference information sources.• To use appropriate strategies for finding, critically evaluating, validating and verifying information, e.g. using different keywords, skim reading to check relevance of information, cross checking with different websites or other non ICT resources.• To use knowledge of the meaning of different domain names and common website extensions (e.g. .co.uk; .com; .ac; .sch; .org; .gov; .net) to support validation of information. |
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