

Long Term Computing Curriculum Overview

Year 1				
National Curriculum	Information Technology	Digital Literacy	Programming	E-safety
	Recognise common uses of information technology beyond school	Use technology purposefully to create, organise, store, manipulate and retrieve digital content	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	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.
Learning Objectives	I can recognise and can give examples of common uses of information technology they encounter in their daily routine.	I can increasingly use a range of technology to enquire with purpose, accessing and creating digital content such as still and moving images, video, audio and text. With appropriate levels of support, I can collect data (e.g. numerical, research facts etc.) which I can then to retrieve, store and manipulate. I can present and communicate their learning to others in a variety of ways. With support, I can begin to access and retrieve online content, making appropriate choices to achieve specific goals.	I can create, debug and implement instruction (simple algorithms) as programs on a range of digital devices. I can understand that digital devices follow precise and unambiguous instructions. I can understand that digital devices simulate real situations.	I can understand that information about myself may be personal and I can choose who to share it with. With support, I can manage my online activity safely, recognising which information should be kept private. I can explain what it means to stay safe online. I can identify some of the potential risks associated with the online world. I can communicate safely and respectfully using a range of digital devices, making links to my behaviour in the physical world. I can start to develop strategies for managing concerns about online content or contact; seeking help and support when needed.
Resources		Search technology for safe browsing of on-screen texts e.g. Kidrex search engine for children Easy Chart app for iPad. Programs with a range of text and mark making tools and editing features. Recording equipment, cameras and simple/child friendly editing software. Lego story starter, Bamboo Paper App for iPads, iPad camera, Photostory . Starz+ learning platform for safe discussion boards and sending messages. Contribute to a class book retelling a traditional tale through digital images. From teacher selected sites, children retrieve information and answer questions to satisfy their curiosity e.g. Where do birds sleep at night?	Beebots Daisy the dinosaur app Beebot app Scratch jnr Weblinks CS4FN (Computer Science for Fun) CS unplugged (Computer Science Unplugged) Role-play acting as 'human robots', predicting what will happen and finding and fixing errors (bugs) along the way. Implement algorithms as programs on Beebots to, for example, find their way to a given point on a map.	Digiduck's Big Decision The Adventures of Smartie the Penguin Hector's World Lee and Kim The Smart Crew Children explore what is meant by 'identity' and take this into account when managing any online profiles. They test this out by creating a profile for a fictional character such as Snow White – what information should she share / not share? What would her online 'nickname' be? Teachers frequently model communicating online (e.g. messaging, blogging etc.) and emphasise e-safety messages. Create an agreed 'class code' which children sign and then follow to ensure they communicate safely, politely and respectfully at all times.

Long Term Computing Curriculum Overview

Year 2				
National Curriculum	Information Technology	Digital Literacy	Programming	E-safety
	Recognise common uses of information technology beyond school	Use technology purposefully to create, organise, store, manipulate and retrieve digital content	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	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.
Learning Objectives	I can recognise common uses of information technology beyond school, including those which I don't frequently encounter in my daily routine.	I can increasingly use a range of technology to enquire with purpose, accessing and creating digital content such as still and moving images, video, audio and text. With appropriate levels of support, I can collect data (e.g. numerical, research facts etc.) which I am able to retrieve, store and manipulate. I can present and communicate my learning to others in a variety of ways. With support, I can begin to access and retrieve online content, making appropriate choices to achieve specific goals.	I can understand that algorithms are implemented as programs on digital devices . I can create and debug programs to achieve specific goals. I can use the principles of logical reasoning to plan and predict the behaviour of simple programs . I can solve real and imaginary problems on and off screen.	I can understand that information about themselves may be personal and I can choose who I share it with. With support, I can manage can my online activity safely, recognising which information should be kept private. I can explain what it means to stay safe online. I can identify some of the potential risks associated with the online world. I can communicate safely and respectfully using a range of digital devices, making links to my behaviour in the physical world. I can start to develop strategies for managing concerns about online content or contact; seeking help and support when needed.
Resources		Search technology for safe browsing of on-screen texts e.g. Kidrex search engine for children Lego StoryStarter Easy Chart app for iPad. Programs with a range of text and mark making tools and editing features. Recording equipment, cameras and simple/child friendly editing software. Lego story starter, Bamboo Paper App for iPads, iPad camera, Photostory . Starz+ learning	Beebots Daisy the dinosaur app Beebot app Scratch jnr Lego Wedo Weblinks CS4FN (Computer Science for Fun) CS unplugged (Computer Science Unplugged) Create visual algorithms using flashcards for e.g. BeeBots. Challenge pupils to create increasingly complex programs such as enacting some of the Beebot app levels. Program on-screen simulations through online resources / early block languages e.g. Daisy the Dinosaur app	Digiduck's Big Decision The Adventures of Smartie the Penguin Hector's World Lee and Kim The Smart Crew Children explore what is meant by 'identity' and take this into account when managing any online profiles. They test this out by creating a profile for a fictional character such as Snow White – what information should she share / not share? What would her online 'nickname' be? Teachers frequently model communicating online (e.g. messaging, blogging etc.) and emphasise e-safety messages. Create an agreed 'class code' which children sign and then follow to ensure they communicate safely, politely and respectfully at all times.

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Year 3				
	Information Technology	Digital Literacy	Programming	E-safety
National Curriculum	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 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	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	Use technology safely, respectfully and responsibly; recognise acceptable / unacceptable behaviour; identify a range of ways to report concerns about content and contact.
Learning Objectives	I can develop an understanding of how computers can be linked to form local networks such as those found in school. I can recognise and describe some of the services offered by the Internet, especially those used for communication and collaboration.	I am a confident and creative user of technology. I am beginning to make informed choices about the appropriateness of digital content I access and create, using an increasing range of digital resources and devices. I can identify, collect and manipulate different types of data (e.g. numerical data from science experiments, words, still and moving images etc.) which I present as information, showing a greater awareness of purpose and audience. I can become more discerning in my choice of search technology to accomplish specific goals. I understand the need for efficiency when conducting searches, choosing keywords carefully.	I can create programs to accomplish specific goals: - using an increasing range of digital devices and applications. - exploring and understanding the impact of changing instructions. - using sequence and repetition - decomposing problems both on and off screen using the principles of logical reasoning in order to resolve problems.	I can, review my online activity, including maintaining amending online profiles, communication channels and publishing spaces to ensure I do not inadvertently reveal personal details. I can show respect for content created by others by acknowledging sources, commenting respectfully and responsibly on other people's work and respecting privacy. I am discriminating about what they share and whether any permission is needed to do so. I can identify a range of potential online risks including inappropriate contact or content and can identify ways of seeking support and reporting concerns. I exercise caution when receiving attachments and following web links contained in messages.
Resources		Access to a multitude of online sites and information but with appropriate levels of protection / filtering to reduce the risk of accessing unsuitable material. Resources for recording, analysing and presenting data and information e.g. database, graphing, presentation tools. Word, audio, video processing, painting & graphics programs. e.g. MS Word or Pages, Movie Maker, Book Creator, or, Stop Motion Pro and Lego Story Starter Use Starz+ as a safe /monitored online space with communication tools for each pupil, o a monitored discussion forum, blogs, messaging and similar online communication tools. Identify lines of enquiry and use child friendly search engines to answer questions. Represent their learning e.g. as a blog entry. Plan, storyboard, film and edit an animation appropriate for an audience of their peers.	More complex floor robots , eg Probots and roamers Lego Wedo plus expansion packs Logo software e.g. Textease Turtle, Imagine Logo Programming apps / software eg Scratch Logic problems / maths puzzles Physical systems: models, buzzers, bulbs, control boxes (e.g. Flowgo boxes)and leads, building kits. Lego, Weblinks ▪ CS4FN (Computer Science for Fun) ▪ CS unplugged (Computer Science Unplugged) ▪ http://www.code-it.co.uk/ Use an on-screen logo program to draw simple shapes such as a rocket ship or house. Find and correct errors (debug) to achieve each goal efficiently. Create simple animations using move, say and sound commands in Scratch e.g. launch a rocket ship using a drum roll and a countdown	The Smart Crew CBBC Stay Safe CBBC Who do you share your details with? CBBC Don't Lie About Your Age Online CBBC Guy Fawkes - Internet Privacy Settings CBBC Saxon- Internet Videos are Forever Children evaluate their own ongoing online profile and activity, thinking carefully about what it reveals about them. They frequently post in blogs and comment on other people's posts. When researching facts about themes (using age appropriate search engines), pupils check the value of websites, acknowledge sources by including them in their presentations as footnotes or alongside pictures.

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Year 4				
	Information Technology	Digital Literacy	Programming	E-safety
National Curriculum	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 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	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	Use technology safely, respectfully and responsibly; recognise acceptable / unacceptable behaviour; identify a range of ways to report concerns about content and contact.
Learning Objectives	I can develop an understanding of how computers can be linked to form local networks such as those found in school. I can recognise and describe some of the services offered by the Internet, especially those used for communication and collaboration.	I am a confident and creative user of technology. I am beginning to make informed choices about the appropriateness of digital content I access and create, using an increasing range of digital resources and devices. I can identify, collect and manipulate different types of data (e.g. numerical data from science experiments, words, still and moving images etc.) which they present as information, showing a greater awareness of purpose and audience. I can become more discerning in my choice of search technology to accomplish specific goals. I understand the need for efficiency when conducting searches, choosing keywords carefully.	I can create and debug programs: - using sequence and repetition. - refining algorithms to improve efficiency - controlling or simulating physical systems. I can begin to explore and notice the similarities and differences between programming languages and use this knowledge to help them create and debug programs efficiently.	I can, review my online activity, including maintaining amending online profiles, communication channels and publishing spaces to ensure I do not inadvertently reveal personal details. I can show respect for content created by others by acknowledging sources, commenting respectfully and responsibly on other people's work and respecting privacy. I can discriminate about what I share and whether any permission is needed to do so. I can identify a range of potential online risks including inappropriate contact or content and can identify ways of seeking support and reporting concerns. I exercise caution when receiving attachments and following web links contained in messages.
Resources		Access to a multitude of online sites and information but with appropriate levels of protection / filtering to reduce the risk of accessing unsuitable material. Resources for recording, analysing and presenting data and information e.g. database, graphing, presentation tools. Word, audio, video processing, painting & graphics programs. e.g. MS Word or Pages, Movie Maker, Book Creator, or, Stop Motion Pro and Lego StoryStarter Use Starz+ as a safe /monitored online space with communication tools for each pupil, o a monitored discussion forum, blogs, messaging and similar online communication tools. Identify lines of enquiry and use child friendly search engines to answer questions. Represent their learning e.g. as a blog entry. Plan, storyboard, film and edit an animation appropriate for an audience of their peers.	More complex floor robots , eg Probots and roamers Lego Wedo plus expansion packs Logo software e.g. Textease Turtle, Imagine Logo Programming apps / software eg Scratch Logic problems / maths puzzles Physical systems: models, buzzers, bulbs, control boxes (e.g. Flowgo boxes)and leads, building kits. Lego, Weblinks ▪ CS4FN (Computer Science for Fun) ▪ CS unplugged (Computer Science Unplugged) ▪ http://www.code-it.co.uk/ Draw simple 2D shapes using repeating instructions (e.g. draw a square by drawing a line, turning 90° and then repeating this 4 times). Replicate this on screen using logo software or a block programming app such as Hopscotch. Create a 'rolling ball' maze game in Scratch, thinking carefully about how the ball will move and what obstacles players will face.	The Smart Crew CBBC Stay Safe CBBC Who do you share your details with? CBBC Don't Lie About Your Age Online CBBC Guy Fawkes - Internet Privacy Settings CBBC Saxon- Internet Videos are Forever Ace www.ccc-esafety.org.uk Children evaluate their own ongoing online profile and activity, thinking carefully about what it reveals about them. They frequently post in blogs and comment on other people's posts. When researching facts about themes (using age appropriate search engines), pupils check the value of websites, acknowledge sources by including them in their presentations as footnotes or alongside pictures.

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Year 5				
National Curriculum	Information Technology	Digital Literacy	Programming	E-safety
	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 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	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	Use technology safely, respectfully and responsibly; recognise acceptable / unacceptable behaviour; identify a range of ways to report concerns about content and contact.
Learning Objectives	I can understand and can explain how computer networks work (including the Internet). I can recognise that there is a difference between the Internet and the World Wide Web and know that the web is just one of the services offered by the Internet. I can appreciate how search results are ranked, including an understanding of the role of 'relevance' and 'importance' in presenting results.	I am a confident, capable and creative user of technology, selecting and making effective use of digital resources and devices for purpose and effect. I can create programs, systems and digital content, thinking carefully about aesthetics, functionality and impact on the user. I can identify, collect and analyse different types of data (e.g. Numerical, words, images, video etc.) which I can manipulate and re-present as information for a variety of audiences and purposes. I am discerning in evaluating digital content. I can use search technologies effectively to respond to enquiries and support my learning.	I can deconstruct, improve and create programs including: - using selection and working with variables. - using the principles of logical reasoning - challenging myself by making simple programs increasingly complex and employ a variety of strategies to solve problems. I can explain why I have structured algorithms as I have and describe the effect this has on a program.	I can continue to maintain, review and amend online identities, considering the potential impact of these on my digital footprint. I can communicate in a wide variety of ways and pay careful attention to what details might be inadvertently revealed. I can engage with an increasing range of online communities safely, respectfully and responsibly both with friends and the wider online community. With adult support, I can actively consider and use safety and security settings on a range of digital devices. When using online resources and search technologies, I can be increasingly discerning about what information they gather, checking the validity of data and showing due respect to privacy and copyright. I can recognise a range of potential online risks, including inappropriate contact or content and can identify ways of seeking support and reporting concerns.
Resources		Search technologies for accessing appropriate online content – in particular child friendly research tools such as NICE AquaBrowser Library - with due regard to copyright and privacy. In order for pupils to build on work undertaken previously they will need a widening range of tools to choose from: - Text – Publisher, Prezi, EBook Creators - Image – Photo editing software, Paint packages - Sound- Audacity, Garage band, Recorder - Motion- Stop Motion Animator, Time lapse, Movie maker, iMovie and Lego StoryStarter Plan and create a more substantial technology rich artefact e.g. an e-book, having made choices about the appropriate medium, content and structure, demonstrating an understanding of audience and purpose and maximizing the use of a range of technology applications. Choose to use electronic forms of communication with purpose to support learning as well as for social interaction, observing correct procedures in the use of personal information. e.g. participate in a collaborative poetry writing and performance project	Physical systems: models, buzzers, bulbs, control boxes and Leads, building kits Lego WeDO and Lego Mindstorm Flowchart based control software (e.g. Flowol4, CoCo) Programming apps / software Scratch) Weblinks CS4FN (Computer Science for Fun) CS unplugged (Computer Science Unplugged) www.webmaker.org. (for teacher use and possible demonstration) http://www.code-it.co.uk/ Program on screen simulations such as traffic lights or fairground rides using software such as Flowol4. Begin to control models with bulbs, buzzers and motors and include switches to control the sequence of actions. Create a greetings card in Scratch using the 'broadcast message' command and a variable where users can add their own name.	Cybercafe Becky's 'Jigsaw' video (You Tube) CBBC Caught in the Web: CBBC Who Do You Share Your Details With Watch the Password Rap The Yo Zone in www.gridclub.com Your Call Quiz http://www.childnet.com/yourcall/ Ace www.ccc-esafety.org.uk Pupils continue with work on protecting their online identity but extend this to the wider online community, perhaps by signing up to useful educational sites such as Scratch. Schools must bear in mind the need to carry out risk assessments for this level of activity and ensure parents are aware of the benefits and risks. Pupils explore and articulate their understanding of how to stay safe online by giving advice to younger children or relatives e.g. by making posters, leaflets of advisory videos.

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Year 6				
National Curriculum	Information Technology	Digital Literacy	Programming	E-safety
	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 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	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	Use technology safely, respectfully and responsibly; recognise acceptable / unacceptable behaviour; identify a range of ways to report concerns about content and contact.
Learning Objectives	I can understand and can explain how computer networks work (including the Internet). I can recognise that there is a difference between the Internet and the World Wide Web and know that the web is just one of the services offered by the Internet. I can appreciate how search results are ranked, including an understanding of the role of 'relevance' and 'importance' in presenting results.	I am a confident, capable and creative user of technology, selecting and making effective use of digital resources and devices for purpose and effect. I can create programs, systems and digital content, thinking carefully about aesthetics, functionality and impact on the user. I can identify, collect and analyse different types of data (e.g. Numerical, words, images, video etc.) which I can manipulate and re-present as information for a variety of audiences and purposes. I am discerning in evaluating digital content. I can use search technologies effectively to respond to enquiries and support my learning.	I can deconstruct, improve and create programs including: - using selection and working with variables. - using the principles of logical reasoning - challenging myself by making simple programs increasingly complex and employ a variety of strategies to solve problems. I can explain why I have structured algorithms as I have and describe the effect this has on a program.	I can continue to maintain, review and amend online identities, considering the potential impact of these on my digital footprint. I can communicate in a wide variety of ways and pay careful attention to what details might be inadvertently revealed. I can engage with an increasing range of online communities safely, respectfully and responsibly both with friends and the wider online community. With adult support, I can actively consider and use safety and security settings on a range of digital devices. When using online resources and search technologies, I can be increasingly discerning about what information they gather, checking the validity of data and showing due respect to privacy and copyright. I can recognise a range of potential online risks, including inappropriate contact or content and can identify ways of seeking support and reporting concerns.
Resources		Search technologies for accessing appropriate online content – in particular child friendly research tools such as NICE AquaBrowser Library - with due regard to copyright and privacy. In order for pupils to build on work undertaken previously they will need a widening range of tools to choose from: - Text – Publisher, Prezi, EBook Creators - Image – Photo editing software, Paint packages - Sound- Audacity, Garage band, Recorder - Motion- Stop Motion Animator, Time lapse, Movie maker, iMovie and Lego StoryStarter Plan and create a more substantial technology rich artefact e.g. an e-book, having made choices about the appropriate medium, content and structure, demonstrating an understanding of audience and purpose and maximizing the use of a range of technology applications. Choose to use electronic forms of communication with purpose to support learning as well as for social interaction, observing correct procedures in the use of personal information. e.g. participate in a collaborative poetry writing and performance projec.	Physical systems: models, buzzers, bulbs, control boxes and Leads, building kits Lego WeDO and Lego Mindstorm Flowchart based control software (e.g. Flowol4, CoCo) Programming apps / software Scratch) Weblinks CS4FN (Computer Science for Fun) CS unplugged (Computer Science Unplugged) www.webmaker.org. (for teacher use and possible demonstration) http://www.code-it.co.uk/ Create more complex, 2 player 'bumper cars' game with consequences built in for crashing into each other or the 'barriers'. How many players can you accommodate? 'Pitch' your coding skills in an 'apprentice' style scenario, explaining how you've been efficient and why your game is better than anyone else's! Use constructions kits to build physical models incorporating bulbs, buzzers, motors and a selection of switches.	