

Teaching of Computing at Annie Lennard

Curriculum

The National Curriculum targets for both KS1 and KS2 can be separated into three separate strands. These are information technology, computer science and digital literacy. Information technology explores basic computing skills, such as word processing skills, and allow for the children to develop the skills they need to be able to understand how technology works and how they can use it for different purposes. Computer science and digital literacy is where children develop the skill of using a computer to help solve problems. This strand also covers coding in which the children will develop skills of how to write algorithms and how they can debug any errors that arise. In KS2, this strand also includes developing an understanding of networks and how they work, such as how the internet provides multiple opportunities for communication and collaboration. Digital literacy covers online safety, ensuring children know the possible risks and are using technology safely.

Teaching the curriculum

Within the EYFS curriculum, the targets found within this document can be covered through allowing them access to the relevant technologies and incorporating them through activities provided during the day.

At the moment, all year groups in KS1 and KS2 have a timetabled hour each week to teach the skills and knowledge required. However, this doesn't have to always be the case. Most of the statements within the information technology stand can be covered through other subjects within the curriculum. For example, most of the data handling targets can be covered within maths and science lessons. However, it needs to be made clear that the computing lesson still has a place within the curriculum as computer science lessons will need a more explicit teaching approach. Also, new apps and or tools within existing programs may also benefit from the explicit teaching before it is used across other areas of the curriculum. During weeks in which you are not teaching a computing session, please be explicit on your timetables which lesson has the computing links to ensure that it is still being covered each week.

Programs and tools

There are a wide range of programs that allow for these targets to be met. For computer science, we will continue to follow the Purple Mash scheme of work as this has been the most successful method of teaching this area of computing and will also show progression from KS1 and KS2. However, if you wish to incorporate other methods of coding, such as Beebots and Daisy the Dinosaur, then that is fine.

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Progression of computing at Annie Lennard

National Curriculum Statements

<u>Key Stage 1</u>	<u>Key Stage 2</u>
<p>Pupils should be taught to:</p> <ul style="list-style-type: none">□ 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 purposefully to create, organise, store, manipulate and retrieve digital content□ 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.	<p>Pupils should be taught to:</p> <ul style="list-style-type: none">□ 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□ 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□ use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact.

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Word Processing/Typing						
Curriculum Link	EYFS					
Children recognise that a range of technology is used in places such as homes and schools. They select and use technology for particular purposes.	I can play on a touch screen game and use computers/keyboards/mouse in role play I can type letters with increasing confidence using a keyboard and tablet. I can dictate short, clear sentences into a digital device.					
Curriculum Link	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<p>KS1: 1.4 use technology purposefully to create, organise, store, manipulate and retrieve digital content</p> <p>KS2: 1.6 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.</p>	I can confidently type words on a digital device. I can use the space bar to make space and delete to delete letters/words I can make a new line using enter/return I can dictate into a digital device more accurately and with punctuation.	I can confidently type words quickly and confidently on a digital device. I can use the space bar only once between words and use touch to navigate to words letter to edit I can copy and paste images and text I can use caps locks for capital letters. I can add images alongside text in a word-processed document. I can dictate longer passages into a digital	I can use index fingers on keyboard home keys (f/j), use left fingers for a/s/ d/f/g, and use right fingers for h/j/k/l I can edit the style and effect of my text and images to make my document more engaging and eye-catching. For example, borders and shadows. I can use cut, copy and paste to quickly duplicate and organise text.	I can combine digital images from different sources, objects, and text to make a final piece of a variety of tasks: posters, documents, eBooks, scripts, leaflets. I can confidently and regularly use text shortcuts such as cut, copy and paste and delete to organise text I can use font sizes appropriately for audience and purpose. I can use spell check and thesaurus including through Siri	I can start to apply other useful effects to my documents such as hyperlinks. I can import sounds to accompany and enhance the text in my document. I can organise and reorganise text on screen to suit a purpose.	I can confidently choose the best application to demonstrate my learning. I can format text to suit a purpose. I can publish my documents online and discuss the audience and purpose of my content.

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		device with accurate punctuation.				
Data Handling						
Curriculum Link	EYFS					
Children recognise that a range of technology is used in places such as homes and schools. They select and use technology for particular purposes.	<p>I can identify a chart.</p> <p>I can sort physical objects, take a picture and discuss what I have done.</p> <p>I can present simple data on a digital device.</p>					
Curriculum Link	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<p>KS1: 1.4 use technology purposefully to create, organise, store, manipulate and retrieve digital content</p> <p>KS2: 1.6 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.</p>	<p>I can sort images or text into two or more categories on a digital device.</p> <p>I can collect data on a topic.</p> <p>I can create a tally chart and pictogram.</p> <p>I can record myself explaining what I have done and what it shows me.</p>	<p>I can sort digital objects into a range of charts such as Venn diagrams, Carroll diagrams and bar charts using different apps and software.</p> <p>I can orally record myself explaining what the data shows me.</p> <p>I can create a branching database using questions</p>	<p>I can create my own sorting diagram and complete a data handling activity with it using images and text.</p> <p>I can start to input simple data into a spreadsheet.</p> <p>I can create a feelings chart exploring a story or character's feelings.</p>	<p>I can create my own online multiple-choice questionnaire.</p> <p>I can input data into a spreadsheet and export the data in a variety of ways: charts, bar charts, pie charts.</p> <p>I understand how data is collected</p>	<p>I can create and publish my own online questionnaire and analyse the results.</p> <p>I can use simple formulae to solve calculations including =sum and other statistical functions</p> <p>I can edit and format difference cells in a spreadsheet.</p>	<p>I can write spreadsheet formula to solve more challenging maths problems.</p> <p>I can create and publish my own online quiz with a range of media (images and video)</p>

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Presentations, web design and eBook Creation

EYFS

Children recognise that a range of technology is used in places such as homes and schools. They select and use technology for particular purposes.

I can record my voice over a picture.
I can create a simple digital collage.
I can move and resize images with my fingers or mouse.

Curriculum Link	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<p>KS1: 1.4 use technology purposefully to create, organise, store, manipulate and retrieve digital content</p> <p>KS2: 1.6 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.</p>	<p>I can add labels to an image</p> <p>I can order images to create a simple storyboard.</p> <p>I can create a simple spider diagram.</p> <p>I can sequence a series of pictures to explain my understanding of a topic.</p>	<p>I can add voice labels to an image.</p> <p>I can add a voice recording to a storyboard.</p> <p>I can add speech bubbles to an image to show what a character is thinking.</p> <p>I can import images to a project from the web and camera roll</p>	<p>I can create an interactive comic with sounds, formatted text and video.</p> <p>I can annotate an image with videos</p> <p>I can create a simple web page.</p> <p>I can create a simple digital timeline/ mind map</p>	<p>I can create an interactive quiz introducing hyperlinks.</p> <p>I can create an eBook with text, images and sound.</p> <p>I can create a presentation demonstrating my understanding with a range of media.</p> <p>I can create a digital timeline/ mind map and include different media - sound and video.</p>	<p>I can collaborate with peers using online tools, e.g. blogs, Google Drive, Office 365</p> <p>I can create an interactive presentation including a variety of media, animations, transitions and other effects.</p> <p>I can create an interactive guide to a image by embedding digital content and publishing it online.</p> <p>I can create a webpage and embed video.</p>	<p>I can create a web site which includes a variety of media.</p> <p>I can design an app prototype that links multimedia pages together with hyperlinks.</p> <p>I can choose applications to communicate to a specific audience.</p> <p>I can evaluate my own content and consider ways to improvements.</p>

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Video Creation, Sound and Animation						
EYFS						
Children recognise that a range of technology is used in places such as homes and schools. They select and use technology for particular purposes.		I can take pictures and film video with support I can be aware that digital pictures and video can be displayed on a computer screen I can listen to pre-recorded sounds such as music with support I can record and playback sounds such as my own voice or the voice of others with support I can find ways to change your voice such as talking through a tube or shouting.				
Curriculum Link	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
KS1: 1.4 use technology purposefully to create, organise, store, manipulate and retrieve digital content KS2: 1.6 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.	I can independently take a picture and record video I can be aware that digital pictures and video can be saved on a computer I can add captions or sound to drawn images, photos or video, with support I can understand that sound can be recorded and played back I can record my own voice or others independently.	I can capture videos and which videos to keep and why · I can take appropriate pictures or video for a specific purpose (E.g. as part of a topic) I can arrange clips to make a short film that conveys meaning I can add simple titles and credits I can select text and make simple changes including bold, italic and underlined I can edit images using an art package	I can use a storyboard to edit a sequence of digital pictures or video with support. (change sequence, add transitions, effects, and sound) I can take a series of pictures to form a simple animation I can move one item within the animation I can edit and improve my animation I can record sound on the computer and be able to use the sound files in other applications with support	I can use a storyboard to edit a sequence of digital pictures or video independently. (change sequence, add transitions, effects, and sound) I can plan what will happen in my film or animation. Can take a series of pictures to form a more complicated animation I can move multiple items within my animation Can begin to evaluate the suitability of the	I can capture video for a purpose and discuss the quality of videos and choose which to keep and which to re-shoot I can trim and arrange clips to convey meaning · I can add titles, credits, slide transitions, special effects and talk about the effect these have on the audience · I can add voice over and edit sound clips (volume, pitch, fade, effect) to create a podcast.	I can plan a multi-scene animation or film including characters, scenes, camera angles and special effects I can use stop-go animation software to shoot animation frames · I can adjust the number of photographs taken and the frame rate to improve the quality of the animation · I can use a movie editing package to edit/refine and add titles ·

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		<p>or other software e.g. crop, resize</p> <p>I can create a musical composition using software</p> <p>I can record my own sound effects.</p>		<p>presentation for the given audience ·</p> <p>I can make changes to the presentation to make it more suitable for the audience, with support ·</p> <p>I can edit sound effects for a purpose.</p> <p>I can record a radio broadcast or audiobook.</p>		<p>I can plan for the use of special effects/transitions to enhance my video · I can trim, arrange and edit audio levels of video to improve the quality of the outcome ·</p> <p>I can add titles, credits, transitions, special effects</p> <p>I can export their video in different formats for different purposes ·</p> <p>I can add voice over, sound effects and edit sound clips (volume, pitch, fade, effect) for my movie.</p>
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Computer Science – Computational thinking/ Coding and programming

EYFS

Children recognise that a range of technology is used in places such as homes and schools. They select and use technology for particular purposes.

- I can follow simple oral algorithms
- I can spot simple patterns
- I can sequence simple familiar tasks
- I can use a mouse, touch screen or appropriate device to target and select options on screen
- I can input a simple sequence of commands to control a digital device with support (for example, Bee Bots)

Curriculum Link	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<p>KS1:</p> <p>1.1 understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions</p> <p>1.2 create and debug simple programs</p> <p>1.3 use logical reasoning to predict the behaviour of simple programs</p> <p>KS2:</p> <p>1.1 design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts</p> <p>1.2 use sequence,</p>	<p>I can understand that an algorithm is a set of instructions used to solve a problem or achieve an objective.</p> <p>I know that an algorithm is written for a computer is called a program.</p> <p>I can work out what is wrong with a simple algorithm when the steps are out of order</p> <p>I can read code one line at a time and make good attempts to envision the bigger picture of the overall effect of the program</p>	<p>I can explain that an algorithm is a set of instructions to complete a task.</p> <p>I can create a simple program that achieves a specific purpose.</p> <p>I can identify the parts of a program that respond to specific events and initiate specific actions.</p>	<p>I can turn a simple real-life situation into an algorithm for a program by deconstructing it into manageable parts.</p> <p>I can demonstrate the ability to design and code a program that follows a simple sequence.</p> <p>I can experiment with timers to achieve repetition effects in their programs</p> <p>I am beginning to understand the difference in the effect of using a timer command rather than a repeat command</p>	<p>I can turn a real-life situation into an algorithm, thinking of the required task and how to accomplish this in code using coding structures for selection and repetition.</p> <p>I can make more intuitive attempts to debug my own programs.</p> <p>I can use timers to achieve repetition effects, becoming more logical and integrated into my program designs.</p> <p>I can understand 'if statements' for selection and attempt to combine these with other coding</p>	<p>I can attempt to turn more complex real-life situations into algorithms for a program by deconstructing it into manageable parts.</p> <p>I am able to test and debug my programs throughout development and can use logical methods to identify the approximate cause of any bug.</p> <p>I can identify the specific line of code where an error has taken place with support.</p>	<p>I can turn a more complex programming task into an algorithm by identifying the important aspects of the task (abstraction) and then decomposing them in a logical way using their knowledge of possible coding structures and applying skills from previous programs.</p> <p>I can test and debug my program as I work through and use logical methods to identify the cause of bugs, demonstrating a systematic approach to try to</p>

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<p>selection, and repetition in programs; work with variables and various forms of input and output</p> <p>1.3 use logical reasoning to explain how some simple algorithms work and to detect and correct errors in algorithms and programs.</p>			<p>when creating repetition effects.</p> <p>I can understand how variables can be used to store information while a program is executing.</p> <p>I can design programs that show logical, achievable steps and absorbing some new knowledge of coding structures. ('if' statements, repetition and variables)</p> <p>I can make good attempts to explore more complex code in order to identify errors in algorithms and can correct this.</p>	<p>structures including variables to achieve the effects that I design in my programs.</p> <p>I can understand how variables can be used to store information while a program is executing.</p> <p>I can use and manipulate the value of variables.</p> <p>I can make use of user inputs and outputs such as 'print to screen'.</p> <p>I can continue to design programs that show logical, achievable steps and absorbing some new knowledge of coding structures. ('if' statements, repetition and variables)</p> <p>I can trace code and use step-through methods to identify errors in code and make logical attempts to correct this.</p>	<p>I can translate algorithms that include sequence, selection and repetition into code with increasing ease to show I am thinking of how to accomplish the set task in code utilising such structures.</p> <p>I am combining sequence, selection and repetition with other coding structures to achieve in my algorithm design.</p> <p>I am beginning to think about my code structure in terms of the ability to debug and interpret the code later, e.g. the use of tabs to organise code and the naming of variables.</p>	<p>identify a particular line of code causing a problem.</p> <p>I can translate algorithms that include sequence, selection and repetition into code and my own designs show that I am thinking of how to accomplish the set task in code utilising such structures, including nesting structures within each other.</p> <p>I can create code that shows an improving understanding of variables in coding, outputs such as sound, movement and inputs from the user of the program (button clicks and the value of functions)</p> <p>I can interpret a program in parts and can make logical</p>
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				I can 'read' programs with several steps and predict the outcome accurately.		attempts to put the separate parts of a complex algorithm together to explain the program as a whole.
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Computer Science – Networking (KS2 only)						
Curriculum Link	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<p>KS2:</p> <p>1.4 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.</p>			<p>I understand that computers in a school are connected together in a network</p> <p>I understand why computers are networked</p> <p>I can list a range of ways that the internet can be used to provide different methods of communication.</p> <p>I can use some of these methods of communication, such as email</p>	<p>I understand that servers on the Internet are located across the planet</p> <p>I understand how email is sent across the Internet</p> <p>I understand how the Internet enables us to collaborate</p> <p>I understand the online safety implications associated with the ways the internet can be used to provide different methods of communication.</p>	<p>I can understand the value of computer networks but are also aware of the main dangers.</p> <p>I can recognise what personal information is and can explain how this can be kept safe.</p> <p>I can select the most appropriate form of online communications based on audience and digital content</p>	<p>I can understand and can explain in some depth the difference between the internet and the World Wide Web.</p> <p>I know what a WAN and LAN are and can describe how we access the internet in school.</p> <p>I understand what HTML is and recognize HTML tags</p> <p>I know a range of HTML tags and can remix a web page</p>