

Aston All Saints C of E Primary Computing Progression document



	<p>The national curriculum for computing aims to ensure that all pupils:</p> <ul style="list-style-type: none"> • Can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation • Can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems • Can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems • Are responsible, competent, confident and creative users of information and communication technology. 	
	<p style="text-align: center;">Key Stage 1</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 style="text-align: center;">Key Stage 2</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.

Computer science						
<p>UTW – Technology – 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>	<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 		<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 			
EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<p>Plan out a set of instructions.</p> <p>Write a simple program.</p> <p>Debug a program if results not correct.</p> <p>Program a BeeBot to move to a particular position.</p>	<p>Children understand that an algorithm is a set of instructions used to solve a problem or achieve an objective.</p> <p>They know that an algorithm written for a computer is called a program.</p> <p>Children can work out what is wrong with a simple algorithm when the steps are out of order, e.g. The Wrong Sandwich in Purple Mash and can write their own simple algorithm, e.g.</p>	<p>Children can explain that an algorithm is a set of instructions to complete a task.</p> <p>When designing simple programs, children show an awareness of the need to be precise with their algorithms so that they can be successfully converted into code.</p> <p>Children can create a simple program that achieves a specific purpose. They can also identify and correct some errors,</p>	<p>Children can turn a simple real-life situation into an algorithm for a program by deconstructing it into manageable parts. Their design shows that they are thinking of the desired task and how this translates into code.</p> <p>Children can identify an error within their program that prevents it following the desired algorithm and then fix it.</p> <p>Children demonstrate the</p>	<p>When turning a real-life situation into an algorithm, the children's design shows that they are thinking of the required task and how to accomplish this in code using coding structures for selection and repetition.</p> <p>Children make more intuitive attempts to debug their own programs.</p> <p>Children's use of timers to achieve repetition effects are becoming more</p>	<p>Children may attempt to turn more complex real-life situations into algorithms for a program by deconstructing it into manageable parts.</p> <p>Children are able to test and debug their programs as they go and can use logical methods to identify the approximate cause of any bug but may need some support identifying the specific line of code.</p>	<p>Children are able to 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>Children test and debug their program as they go and use logical methods to identify the cause of bugs, demonstrating</p>



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	<p>Colouring in a Bird activity. Children know that an unexpected outcome is due to the code they have created and can make logical attempts to fix the code, e.g. Bubbles activity in 2Code</p> <p>When looking at a program, children can read code one line at a time and make good attempts to envision the bigger picture of the overall effect of the program. Children can, for example, interpret where the turtle in 2Go challenges will end up at the end of the program.</p>	<p>e.g. Debug Challenges: Chimp.</p> <p>Children's program designs display a growing awareness of the need for logical, programmable steps.</p> <p>Children can identify the parts of a program that respond to specific events and initiate specific actions. For example, they can write a cause and effect sentence of what will happen in a program.</p>	<p>ability to design and code a program that follows a simple sequence.</p> <p>They experiment with timers to achieve repetition effects in their programs.</p> <p>Children are beginning to understand the difference in the effect of using a timer command rather than a repeat command when creating repetition effects.</p> <p>Children's designs for their programs show that they are thinking of the structure of a program in logical, achievable steps and absorbing some new knowledge of coding structures. For example, repetition and use of timers. They make good attempts to 'step through' more</p>	<p>logical and are integrated into their program designs.</p> <p>They understand 'IF statements' for selection and attempt to combine these with other coding structures including variables to achieve the effects that they design in their programs.</p> <p>As well as understanding how variables can be used to store information while a program is executing, they are able to use and manipulate the value of variables.</p> <p>Children can make use of user inputs and outputs such as 'print to screen'. e.g. 2Code.</p> <p>Children's designs for their programs show that they are thinking of the structure of a program in logical,</p>	<p>Children can translate algorithms that include sequence, selection and repetition into code with increasing ease and their own designs show that they are thinking of how to accomplish the set task in code utilising such structures. They are combining sequence, selection and repetition with other coding structures to achieve their algorithm design.</p> <p>When children code, they are beginning to think about their 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>Children understand the value of computer networks but are also aware of</p>	<p>a systematic approach to try to identify a particular line of code causing a problem</p> <p>Children translate algorithms that include sequence, selection and repetition into code and their own designs show that they are thinking of how to accomplish the set task in code utilising such structures, including nesting structures within each other.</p> <p>Coding displays an improving understanding of variables in coding, outputs such as sound and movement, inputs from the user of the program such as button clicks and the value of functions.</p> <p>Children are able to interpret a program in parts and can</p>
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			<p>complex code in order to identify errors in algorithms and can correct this.</p> <p>Children can list a range of ways that the Internet can be used to provide different methods of communication.</p>	<p>achievable steps and absorbing some new knowledge of coding structures. For example, 'IF' statements, repetition and variables. They can trace code and use step-through methods to identify errors in code and make logical attempts to correct this. In programs such as Logo, they can 'read' programs with several steps and predict the outcome accurately.</p> <p>Children recognise the main component parts of hardware which allow computers to join and form a network. Their ability to understand the online safety implications associated with the ways the Internet can be used to provide different methods of</p>	<p>the main dangers. They recognise what personal information is and can explain how this can be kept safe. Children can select the most appropriate form of online communications contingent on audience and digital content, e.g. 2Blog, 2Email, Display Boards.</p>	<p>make logical attempts to put the separate parts of a complex algorithm together to explain the program as a whole.</p> <p>Children understand and can explain in some depth the difference between the internet and the World Wide Web. Children know what a WAN and LAN are and can describe how they access the internet in school.</p>
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Digital literacy						
EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<ul style="list-style-type: none"> UTW – Technology – Children recognise that a range of technology is used in places such as homes and schools. They select and use technology for particular purposes. 	<ul style="list-style-type: none"> Children understand what is meant by technology and can identify a variety of examples both in and out of school. They can make a distinction between objects that use modern technology and those that do not e.g. a microwave vs. a chair. Children understand the importance of keeping information, such as their usernames and passwords, private and actively demonstrate this in lessons. Children take ownership of their work and save this in their own private space such as their My Work folder on Purple Mash. 		<ul style="list-style-type: none"> Use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concern about content and contact. 			
<p>Select a colour and paint with it.</p> <p>Change colour once one is selected.</p> <p>Use an eraser to delete unwanted pictures or lines.</p> <p>Change the thickness of the line.</p>	<p>Children understand what is meant by technology and can identify a variety of examples both in and out of school.</p> <p>They can make a distinction between objects that use modern</p>	<p>Children can effectively retrieve relevant, purposeful digital content using a search engine. They can apply their learning of effective searching beyond the classroom. They can share this knowledge, e.g.</p>	<p>Children demonstrate the importance of having a secure password and not sharing this with anyone else.</p> <p>Furthermore, children can explain the negative implications of</p>	<p>Children can explore key concepts relating to online safety using concept mapping such as 2Connect.</p> <p>They can help others to understand the importance of online safety.</p>	<p>Children have a secure knowledge of common online safety rules and can apply this by demonstrating the safe and respectful use of a few different technologies and online services.</p> <p>Children implicitly relate appropriate</p>	<p>Children demonstrate the safe and respectful use of a range of different technologies and online services.</p> <p>They identify more discreet inappropriate behaviours through developing critical</p>

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<p>Draw a square or circle using the drawing tool.</p> <p>Flood fill an area with one colour. I can use sparkle and cloud effect I can use undo and redo to edit work.</p>	<p>technology and those that do not e.g. a microwave vs. a chair.</p> <p>Children understand the importance of keeping information, such as their usernames and passwords, private and actively demonstrate this in lessons.</p> <p>Children take ownership of their work and save this in their own private space such as their My Work folder on Purple Mash.</p>	<p>2Publish example template.</p> <p>Children make links between technology they see around them, coding and multimedia work they do in school e.g. animations, interactive code and programs.</p> <p>Children know the implications of inappropriate online searches.</p> <p>Children begin to understand how things are shared electronically such as posting work to the Purple Mash display board.</p> <p>They develop an understanding of using email safely by using 2Respond activities on Purple Mash and know</p>	<p>failure to keep passwords safe and secure.</p> <p>Children understand the importance of staying safe and the importance of their conduct when using familiar communication tools such as 2Email in Purple Mash.</p> <p>They know more than one way to report unacceptable content and contact.</p>	<p>Children know a range of ways of reporting inappropriate content and contact.</p>	<p>online behaviour to their right to personal privacy and mental wellbeing of themselves and others.</p>	<p>thinking, e.g. 2Respond activities.</p> <p>They recognise the value in preserving their privacy when online for their own and other people's safety.</p>
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		ways of reporting inappropriate behaviours and content to a trusted adult.				
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Information technology						
EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
	<ul style="list-style-type: none"> Use technology purposefully to create, organise, store, manipulate and retrieve digital content. 		<ul style="list-style-type: none"> 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. 			
<p>Turn an ipad on and off.</p> <p>Turn a computer on.</p> <p>Type their name using a keyboard.</p> <p>Begin to understand a keyboard has buttons other than letters, e.g. space bar, enter, delete etc.</p> <p>Use a mouse to open an app or draw a picture.</p>	<p>Children are able to sort, collate, edit and store simple digital content e.g. children can name, save and retrieve their work and follow simple instructions to access online resources, use Purple Mash 2Quiz example (sorting shapes), 2Code design mode (manipulating backgrounds) or using pictogram software such as 2Count.</p>	<p>Children demonstrate an ability to organise data using, for example, a database such as 2Investigate and can retrieve specific data for conducting simple searches.</p> <p>Children are able to edit more complex digital data such as music compositions within 2Sequence.</p> <p>Children are confident when creating, naming, saving and</p>	<p>Children can carry out simple searches to retrieve digital content.</p> <p>They understand that to do this, they are connecting to the internet and using a search engine such as Purple Mash search or internet-wide search engines.</p> <p>Children can collect, analyse, evaluate and present data and information using a selection of software, e.g. using</p>	<p>Children understand the function, features and layout of a search engine.</p> <p>They can appraise selected webpages for credibility and information at a basic level.</p> <p>Children are able to make improvements to digital solutions based on feedback.</p> <p>Children make informed software choices when presenting</p>	<p>Children search with greater complexity for digital content when using a search engine.</p> <p>They are able to explain in some detail how credible a webpage is and the information it contains.</p> <p>Children are able to make appropriate improvements to digital solutions based on feedback received and can confidently comment on the</p>	<p>Children readily apply filters when searching for digital content.</p> <p>They are able to explain in detail how credible a webpage is and the information it contains.</p> <p>They compare a range of digital content sources and are able to rate them in terms of content quality and accuracy.</p> <p>Children use critical thinking skills in</p>

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<p>Use an interactive whiteboard for mark-making.</p>		<p>retrieving content. Children use a range of media in their digital content including photos, text and sound.</p>	<p>a branching database (2Question), using software such as 2Graph.</p> <p>Children can consider what software is most appropriate for a given task.</p> <p>They can create purposeful content to attach to emails, e.g. 2Respond</p>	<p>information and data. They create linked content using a range of software such as 2Connect and 2Publish+.</p> <p>Children share digital content within their community, i.e. using Virtual Display Boards.</p>	<p>success of the solution. e.g. creating their own program to meet a design brief using 2Code.</p> <p>They objectively review solutions from others.</p> <p>Children are able to collaboratively create content and solutions using digital features within software such as collaborative mode.</p> <p>They are able to use several ways of sharing digital content, i.e. 2Blog, Display Boards and 2Email.</p>	<p>everyday use of online communication.</p> <p>Children make clear connections to the audience when designing and creating digital content.</p> <p>The children design and create their own blogs to become a content creator on the internet, e.g. 2Blog. They are able to use criteria to evaluate the quality of digital solutions and are able to identify improvements, making some refinements.</p>
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Online safety						
EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
<p>UTW – Technology – 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>	<ul style="list-style-type: none"> • Participate in class social media accounts. • Understand online risks and the age rules for sites 		<ul style="list-style-type: none"> • Contribute to blogs that are moderated by teachers. • Give examples of the risks posed by online communications. • Understand the term ‘copyright’. • Understand that comments made online that are hurtful or offensive are the same as bullying. • Understand how online services work. 		<ul style="list-style-type: none"> • Collaborate with others online on sites approved and moderated by teachers. • Give examples of the risks of online communities and demonstrate knowledge of how to minimise risk and report problems. • Understand and demonstrate knowledge that it is illegal to download copyrighted material, including music or games, without express written permission, from the copyright holder. • Understand the effect of online comments and show responsibility and sensitivity when online. • Understand how simple networks are set up and used. 	
<ul style="list-style-type: none"> • Say some uses for the internet, e.g. watching TV, playing games, finding things out etc. • Discuss who they would speak to if they found 	<ul style="list-style-type: none"> • Pupils can log in using their own login. • Pupils have created their own avatar and understand why they are used. • Pupils can add their name to a picture they created on the computer. 	<ul style="list-style-type: none"> • Pupils can use the search facility to refine searches on Purple Mash by year group and subject. • Pupils can share the work they have created to a display board. 	<ul style="list-style-type: none"> • Pupils understand what makes a good password for use on the Internet. Pupils are beginning to realise the outcomes of not keeping passwords safe. • Pupils can contribute to a 	<ul style="list-style-type: none"> • Pupils know that security symbols such as a padlock protect their identity online. • Pupils know the meaning of the term ‘phishing’ and are aware of the existence of scam websites. 	<ul style="list-style-type: none"> • I think critically about the information that I share online both about myself and others. • I know who to tell if I am upset by something that happens online. 	<ul style="list-style-type: none"> • Pupils have used the example game and further research to refresh their memories about risks online including sharing location, secure websites, spoof websites,

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<p>something upsetting online.</p> <ul style="list-style-type: none"> • Begin to recognise potential dangers online. • Recognise what information about themselves is personal and should not be shared online. • Recognise that too much screen time might not be a good thing. 	<ul style="list-style-type: none"> • Pupils are beginning to develop an understanding of ownership of work online. • Pupils can save work into the My Work folder in Purple Mash and understand that this is a private saving space just for their work. • Pupils can find their saved work in the Online Work area of Purple Mash. • Pupils can find messages that their teacher has left for them on Purple Mash. • Pupils can search Purple Mash to find resources. • Pupils will be able to use the different types of topic templates in the Topics section confidently. • Pupils will be confident with the functionality of the icons in the topic templates. 	<ul style="list-style-type: none"> • Pupils understand that the teacher approves work before it is displayed. • Pupils are beginning to understand how things can be shared electronically for others to see both on Purple Mash and the Internet. • Pupils know that Email is a form of digital communication. • Pupils understand how 2Repond can teach them how to use email. • Pupils can open and send an email to a 2Respond character. • Pupils have discussed their own experiences and understanding of what email is used for. • Pupils have discussed what makes us feel happy and what makes us feel sad. 	<p>concept map of all the different ways they know that the Internet can help us to communicate.</p> <ul style="list-style-type: none"> •Pupils have contributed to a class blog with clear and appropriate messages. • Extension: Pupils understand that passwords help to limit who can see personal / private / confidential information. •Pupils understand that some information held on websites may not be accurate or true. •Pupils are beginning to understand how to search the Internet and how to think critically about the results that are returned. •Pupils have accessed and assessed a 'spooof' website. •Pupils have created their own 'spooof' webpage mock-up. 	<ul style="list-style-type: none"> • Pupils can explain what a digital footprint is and how it relates to identity theft. • Pupils can give examples of things that they would not want to be in their digital footprint. • Pupils can identify possible risks of installing free and paid for software. • Pupils know that malware is software that is specifically designed to disrupt, damage, or gain access to a computer. • Pupils know what a computer virus is. • Pupils can determine whether activities that they undertake online, infringe another's' copyright. They know the difference between researching and using information and copying it • Pupils know about citing sources that they have used. 	<ul style="list-style-type: none"> • I can use the SMART rules as a source of guidance when online. • Pupils think critically about what they share online, even when asked by a usually reliable person to share something. • Pupils have clear ideas about good passwords. • Pupils can see how they can use images and digital technology to create effects not possible without technology. • Pupils have experienced how image manipulation could be used to upset them or others even using simple, freely available tools and little specialist knowledge. • Pupils can cite all sources when researching and explain the importance of this. • Pupils select keywords and search 	<p>phishing and other email scams.</p> <ul style="list-style-type: none"> • Pupils have used the example game and further research to refresh their memories about the steps they can take to protect themselves including protecting their digital footprint, where to go for help, smart rules and security software. • Pupils understand how what they share impacts upon themselves and upon others in the long-term. • Pupils know about the consequences of promoting inappropriate content online and how to put a stop to such behaviour when they experience it or witness it as a bystander. • Extension: Pupils' actions demonstrate that they also feel a
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	<ul style="list-style-type: none"> • Pupils will know how to use the different icons and writing cues to add pictures and text to their work. • Pupils have explored the Tools section on Purple Mash and become familiar with some of the key icons: Save, Print, Open and New. • Pupils have explored the Games section and looked at Table Toons (2x tables). • Pupils can log out of Purple Mash when they have finished using it and know why that is important. 	<ul style="list-style-type: none"> • Pupils can explain what a digital footprint is. • Pupils can give examples of things that they would not want to be in their digital footprint. • Children can identify the basic parts of a web search engine search page. • Children have learnt to read a web search results page. • Children can search for answers to a quiz on the Internet. 	<ul style="list-style-type: none"> • Pupils have shared their 'spooof' web page on a class display board. • Extension: Pupils evaluate facts from a website and explain how they fact checked the information that was presented. • Pupils can identify some physical and emotional effects of playing/watching inappropriate content/games. • Pupils relate cyberbullying to bullying in the realworld and have strategies for dealing with online bullying including screenshot and reporting. • Pupils have written rules about how to stay safe using email. • Pupils have contributed to classmates' rules. • Pupils understand the importance of draft. • Pupils have created a quiz about email 	<ul style="list-style-type: none"> • Pupils can take more informed ownership of the way that they choose to use their free time. They recognise a need to find a balance between being active and digital activities. • Pupils can give reasons for limiting screen time. • Pupils can analyse the contents of a web page for clues about the credibility of the information. 	<p>techniques to find relevant information and increase reliability • Pupils show an understanding of the advantages and disadvantages of different forms of communication and when it is appropriate to use each.</p>	<p>responsibility to others when communicating and sharing content online.</p> <ul style="list-style-type: none"> • Pupils can take more informed ownership of the way that they choose to use their free time. They recognise a need to find a balance between being active and digital activities. • Pupils can give reasons for limiting screen time. • Pupils can talk about the positives and negative aspects of technology and balance these opposing views. • Extension: Pupils have an internalised in-depth understanding of the risks and benefits of an online presence. • Pupils can post comments and blog posts to an existing class blog.
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			<p>safety which explores scenarios that they could come across in the future.</p>			<ul style="list-style-type: none"> • Pupils understand the approval process that their posts go through and demonstrate an awareness of the issues surrounding inappropriate posts and cyberbullying. • Pupils can comment on and respond to other blogs. • Pupils can assess the effectiveness and impact of a blog. • Pupils understand that content included in their blog carefully considers the end user.
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