St Saviour's C of E Academy

Progression in Computing

EYFS

Pupils should be taught to:

Understanding the World (Technology)

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

Key Stage 1

Pupils should be taught to:

- understand what algorithms are, how they are implemented as programs on digital devices, and that programs execute by following precise and unambiguous instructions
- 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

Key Stage 2

Pupils should be taught to:

- design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems; solve problems by decomposing them into smaller parts
- 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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Computing: Year 1
Knowledge, Skills and Understanding

Digital Literacy Internet and E-safety	Information Technology Data organisation, multimedia, communication and presentation	Computer Science Algorithms and Programming
Keeping it private **Digi Duck**	**TUX paint Photo Editing** **2create a story Word**	**Computing basics Beebots** **Kodable**
• Do they understand they need to follow certain rules to remain safe when visiting places online • Learn that many websites ask for information that is private & discuss how to responsibly handle such requests • Learn that directory sites with alphabetical listings offer one way to find things on the Internet • Children will 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 for example a microwave vs. a chair • Children will explore different technology at home and in school and explore how technologies have changed through history	• Children will start logging on, opening and saving their work and developing typing skills • Can they use paint programs to achieve an outcome e.g. TUX paint? • Can they word process ideas using a keyboard and start producing short stories using 2create a story? • Children will begin to use search engines safety to identify information • Can they use the spacebar, back space, enter, shift and arrow keys? • Can they capture images with a camera? • Can they select and print out a photograph from a camera with help? • Can they record a sound and play it back? • Can they enter information into a template to make a simple graph? • Can they talk about the results shown on a graph?	• Children understand that an algorithm is a set of instruction used to solve a problem or achieve an objective. T • Do they know that an algorithm written for a computer is called a program? • Can they create a simple series of instructions - left and right? • Can they record their routes? • Do they understand forwards, backwards, up and down? • Can they begin to plan and test a Bee-bot journey? • Can they put two instructions together to control a programmable toy? • Children will know that an unexpected outcome is due to the code they have created and can make logical attempts to fix the code. • Children can work out what is wrong with a simple algorithm (debug) when the steps are out of order?

Language Progression – Key Vocabulary

Purpose Online tools Communicate Internet private	Videos sound Word bank data digitally	Camera stills Image bank Space bar pictogram	Instructions Buttons Robots Patterns Program

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Computing: Year 2
Knowledge, Skills and Understanding

Digital Literacy Internet and E-safety	Information Technology Data organisation, multimedia, communication and presentation	Computer Science Algorithms and Programming
Staying Safe Online Digital Trails Good/Bad websites Cyberbullying	**Internet research PowerPoint/Keynote Word/Pages To Paint a Picture**	**Beebots Kodable Scratch**
• Learn that directory sites with alphabetical listings offer one way to find things on the Internet • Children will 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 for example a microwave vs. a chair • Children will explore different technology at home and in school and explore how technologies have changed through history • Do they understand they need to follow certain rules to remain safe when visiting places online • Learn that many websites ask for information that is private & discuss how to responsibly handle such requests	• Children will develop typing skills to develop their confidence using a laptop and iPad • Can they find information on a website linked to their current topic? • Can they click links in a website? • Can they print a web page to use as a resource? • Children will use a range of media in their digital content including photos, text and sound • Can they experiment with text, pictures and animation to make a simple slide show using PowerPoint? • Can they use the shape tools to draw? • Can they word process a piece of text? • Can they insert/delete a word using the mouse and arrow keys? • Can they highlight text to change its format (B, U, I)?	• Can they write a simple program and test it? • Children can explain that an algorithm is a set of instructions to complete a task • Can they predict the outcomes of a set of instructions? • Children will tinker with the program Scratch and complete debugging activities to familiarise themselves with these skills • Can they use right angle turns? • Can they use the repeat commands? • Children's program designs display a growing awareness of the need for logical programmable steps. This will be achieved through programs such as ScratchJr and Barefoot activities

Language Progression – Key Vocabulary

Appropriate/inappropriate sites Cyber-bullying Digital footprint Keyword searching Website content	Paint effects Templates Animation Documents Enter/return Caps lock	Information sources Capturing moments Magnified images Data collection Graphs / Charts Save / Retrieve	Forward / Backward Right-angle turn Algorithm Sequence/repeat Debug Predict

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Computing: Year 3
Knowledge, Skills and Understanding

Digital Literacy Internet and E-safety	Information Technology Data organisation, multimedia, communication and presentation	Computer Science Algorithms and Programming
Powerful passwords Respect Online Reliability My Online Community	**Spark Adobe Word/Pages PowerPoint/ Keynote**	**Scratch Computer Networks Introduction to Probots**
• Children will explore how to become digital citizens and how to be safe and responsible • Choose a secure password for age-appropriate websites • Discuss what actions could be taken if they are uncomfortable or upset online e.g. Report Abuse button • Children will investigate how to learn about the kinds of information they should keep to themselves when they use the internet • Pupils will also learn about digital footprints and the impact they can have on their digital experience • Children will explore how the Internet connects us to our community and the world • They will understand what online meanness can look like and identify ways to respond to mean words	• Can they find relevant information by browsing a menu? • Can they search for an image, then copy and paste it into a document? • Can they use 'Save picture as 'to save an image to the computer? • Can they copy and paste text into a document? • Do they begin to use note making skills to decide what text to copy? • Can they use photo editing software to crop photos and add effects? • Can they manipulate sound when using simple recording story boarding? • Can they create a presentation that moves from slide to slide and is aimed at a specific audience or topic? • Can they combine text, images and sounds and show awareness of audience? • Do they know how to manipulate text, underline text, centre text, change font and size and save text to a folder?	• Children demonstrate the ability to design and code a program that follows a simple sequence • They experiment with timers to achieve repetition effects in their programs • Children are beginning to understand the difference in the effect of using a timer command rather than a repeat command when creating repetition effects • Children understand how variables can be used to store information while a program is executing. Can they use 90 degree and 45 degree turns? • Can they give an on-screen robot directional instruction? • Can they draw a square, rectangle and other regular shapes on screen, using commands? • Can they write basic programs using probots and Scratch?

Language Progression – Key Vocabulary

E-safety rules Secure passwords Report abuse button Gaming Blogs School network Appropriate websites	Multimedia Presentations Alignment Brush size Repeats Reflections	Amend Copy Paste Questioning Database Construct	Devices Computer parts Collaborate Search tools Recording data Present data	Sequence instructions Sequence debugging Test + improve Logo commands Sequence programming

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Computing: Year 4
Knowledge, Skills and Understanding

Digital Literacy Internet and E-safety	Information Technology Data organisation, multimedia, communication and presentation	Computer Science Algorithms and Programming
Private and Personal information Rings of Responsibility Cyberbullying	**Publisher E-mails Word/Pages Animation**	**Scratch Advanced Probots**
• They can help others to understand the importance of online safety. Children know a range of ways of reporting inappropriate content and contact • They will conduct their own research relating to different topic areas and be reminded of search ranking and using reliable sources • Choose a secure password for age-appropriate websites • Children will explore the rings of responsibility and explore how their behaviour can affect themselves and others. They will also explore how to develop strong and memorable passwords. Pupils will be encouraged to think critically about the online identities they are creating • Discuss what actions could be taken if they are uncomfortable or upset online e.g. Report Abuse button • Use a class blog to share information and talk about who can see it, and how to communicate safely and respectfully • Can they use a search engine to find a specific website?	• Can they capture images using webcams, screen capture, scanning and internet? • Can they choose images and download into a file? • Children will build upon their use of Word and PowerPoint and continue to add additional media such as images, clip art, animate, hyperlinking and bullet-pointed lists • Can they copy graphics from a range of sources and paste into a desktop publishing program? • Can they enter data, highlight it and make bar charts? • Can they create a presentation that moves from slide to slide and is aimed at a specific audience? • Can they insert sound recordings into a multimedia presentation? • Do they know how to manipulate text, underline text, centre text, change font and size and save text to a folder?	• When turning a real- life situation into an algorithm, the children's design programs that they are thinking of the required task and how to accomplish this in code using coding structures for selection and repetition. Children make more intuitive attempts to debug their own programs • Children will also create a 'scratch' quiz using an 'If… then…' selection command to make their quiz respond 'Well done' when the player answers correctly. Pupils then move on to using an 'If…then… else…' command so the program will also give the correct answer when the player gets an answer wrong. • Can they use repeat instructions to draw regular shapes on screen, using commands? • Can they make accurate predictions about the outcome of a program they have written?

Language Progression – Key Vocabulary

E-safety rules Secure passwords Report abuse button Gaming Blogs	Different networks Information collection Reliability Owners	Creating + modifying Specific purpose Photo modifying Keyboard shortcuts	Bullet points Spell check Database creation Database searches Inaccurate data	Type + edit Sensors Open-ended problems Bugs in programs Complex programming Block coding

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Computing: Year 5
Knowledge, Skills and Understanding

Digital Literacy Internet and E-safety	Information Technology Data organisation, multimedia, communication and presentation	Computer Science Algorithms and Programming
Digital Citizenship Photo Editing Reliability	**iMovie Maker Effective Internet Research PowerPoint/Keynote Scratch**	**Scratch LegoWEDO kits Hour of Code**
• Children have a secure knowledge of common online safety rules • Children will understand how to make informed media choices and begin to develop their own definition of a healthy media balance • Discuss their own personal use of the Internet and choices they make Discuss how to protect devices from virus threats • Discuss the importance of keeping an adult informed about what you're doing online, and how to report concerns • Children will learn how online communication can come with some risks and they will describe the positives and negatives of social interaction in online games	• Children search with greater complexity for digital content when using a search engine. They are able to explain in some detail how credible a webpage is and the information it contains. • Children will conduct their own research relating to different topic areas and be reminded of search ranking and using reliable sources. • Can they manipulate and capture sounds, images and videos using Audacity and Movie Maker? • Can they select music from open sources and incorporate it into multimedia presentations? • Do they consider audience when editing a simple film? • Can they make slideshows that contain hyperlinks to other pages? • Children will also develop their use of PowerPoint to present information. They will practise how to change slide layouts, slide designs and how to use a variety of animations • Can they use bullets and numbering tools? • Can they decide which sections are appropriate to copy and paste from at least two web pages?	• Children may attempt to turn more complex real-life situations into algorithms for a program by deconstructing it into manageable parts • 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 • Children will develop logical number sequences and extend their knowledge of simple rule-based algorithms. Children will apply their skills and practise programming in Hour of Code and Code.org. • They will continue to tinker using the Scratch program to revisit skills. in Scratch, children will create a simulation of the water cycle. They will decide what the purpose of the simulation is and who is the intended audience. This will build up to the skill of abstraction

Language Progression – Key Vocabulary

Responsible online communication Informed choices Virus threats Blogs	Internet parts Collaboration Responsibility Searching strategies Webpages	Online sharing Multimedia effects Multimedia modification Transitions Hyperlinks Editing tools Refining	Online sharing Complex searches Problem solving Present answers Analyse information Question data Interpret	Explore procedures Refine procedures Variable	Change inputs Different outputs Articulate solutions Commands

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Computing: Year 6
Knowledge, Skills and Understanding

Digital Literacy Internet and E-safety	Information Technology Data organisation, multimedia, communication and presentation	Computer Science Algorithms and Programming
Scams Talking Safely Online Privacy Cyberbullying	**Excel/Numbers WIKI's Multi-Media Presentations**	**Lego WEDO kits HTML/Python Block code into text code**
• Children demonstrate the safe and respectful use of a range of different technologies • Children readily apply filters when searching for digital content. They are able to explain in detail how credible a webpage is and the information it contains • Children will understand both the benefits and the risks of online-only friendships. Pupils will learn what is -- and what is not -- cyberbullying, and give them the tools they'll need to combat the problem • Discuss how to protect devices from virus threats • Explore using the safe and responsible use of online communication tools e.g. blogs, messaging • They recognise the value in preserving their privacy when online for their own and other people's safety	• Can they use complex searches using such as '+' 'OR'" Find the phrase in inverted commas"? • Children will conduct their own research relating to different topic areas and be reminded of search ranking and using reliable sources • Can they contribute to discussions online e.g. WIKi? • Do they recognise what a spread sheet is? • Can they use the terms 'cells', 'rows' and 'columns'? • Can they identify data error, patterns and sequences? • Can they use the formulae bar to explore mathematical scenarios? • Can they create their own database and present information from it? • Children make clear connections to the audience when designing and creating digital content • Can they present a film for a specific audience and then adapt same film for a different audience? • Can they create a sophisticated multimedia presentation? • Can they confidently use text formatting tools, including heading and body text?	• 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. • Children test and debug their program as they go and use logical methods to identify the cause of bugs, demonstrating a systematic approach to try to identify a particular line of code causing a problem • Children translate algorithms that include sequence, selection and repetition into code and their own designs show that they are thinking • Children are able to interpret a program in parts and can make logical attempts to put the separate parts of a complex algorithm together to explain the program as a whole using LEGO WEDO kits • Children will understand what HTML is and recgonise HTML tags. They will know a range of HTML tags and remix a web page and they will apply this understanding to create a webpage using HTML

Language Progression – Key Vocabulary

Information movement Connecting devices Different audiences Research strategies	Search results rankings Acknowledge resources Plausibility	Appropriate online tools Audience Atmosphere Structure Copyright Information collection Generate	Process Interpret Store Present information Appropriate data tool Interrogate Investigations	Predicting outputs Plan, program, test & review a program Program writing Control mimics + devices Sensors	Measure input Create variables Link errors HTML code Storing Python Text coding