



Welton St Mary's Church of England Primary Academy



Computing Curriculum

‘Whether you want to uncover the secrets of the universe, or you want to pursue a career in the 21st century, basic computer programming is an essential skill to learn’. - Stephen Hawking

Computing Intent

All pupils at Welton St Mary’s Academy will be provided opportunities to engage in deep and varied learning experiences in the elements of computing. Technology plays an ever-increasingly important role in society and our lives. With this in mind, we aim to help children develop into digitally literate users of technology who are able to participate effectively, creatively and safely in this digital world. Computing has deep links with mathematics, science and design and technology, whilst providing insights into both natural and artificial systems. Learning about Information Technology will allow pupils to effectively use the functions of computers as well as to create a range of content and media. Through Computer Science, pupils are taught the principles of information and computation, how digital systems work and how to put this knowledge to use through programming. A consistent focus on E-safety will ensure that children are equipped with the knowledge and skills to evaluate content and use technology in a safe, respectful and responsible manner.

Implementation

At Welton St Mary’s computing will be taught in 3 strands of Information Technology (using and creating content with computer functions), Computer Science (programming and coding computer instructions) and E-Safety (evaluating content and using technology safely) which together aim to build overall digital literacy for all children.

At Welton St Mary’s, children have access to a computer suite and each year group is equipped with a set of iPads. This ensures that all year groups have the opportunity to use a range of devices and programs for many purposes across the wider curriculum, as well as in discrete computing lessons. Employing cross-curricular links motivates pupils and supports them to apply the knowledge and skills, which they have learned.

The Computing Curriculum of Welton St Mary's follows a progression of skills in each core concept, which continue through year groups and key stages. In order to aid this progression of skills, teachers utilise the code.org program of study in computer science and the National Online Safety resources in E-Safety. Much of the students' work can be found evidenced on Seesaw, which is a digital learning platform allowing children to share their content, access learning and interact with the work of others in a safe, controlled environment.

Computing Overview

	Autumn term 1	Autumn term 2	Spring term 1	Spring term 2	Summer term 1	Summer term 2
Year 1	Coding 	Word Processing 	Coding 	E-Safety 	Coding 	Creating and publishing 
	Word processing 	Powerpoint 	Digital 	Internet 	Office 365 	Excel 
Concept focus	Computer Science & Information Technology			E-safety & Information Technology	Information Technology	Information Technology
Year 2	Coding 	Coding 	Digital 	E-Safety 	Creating and publishing 	Office 365 
	Word processing 	Powerpoint 	Word-processing 	Internet 	Excel 	Creating & publishing 
Concept focus	Computer Science & Information Technology		Information Technology	E-safety & Information Technology	Information Technology	Information Technology
Year 3	Coding 	Coding 	Digital 	E-Safety 	Word Processing 	Creating and Publishing 
	Word Processing 	Word Processing 	Powerpoint 	Internet 	Excel 	Creating and Publishing 
Concept Focus	Computer Science Information Technology		Information Technology	E-safety Information Technology	Information Technology	Information Technology

Year 4	Coding 	Coding 	Digital 	E-Safety 	Word Processing 	Creating and Publishing 
	Word Processing 	Word Processing 	Powerpoint 	Internet 	Excel 	Creating and Publishing 
Concept Focus	Computer Science & Information Technology		Information Technology	E-safety & Information Technology	Information Technology	Information Technology
Year 5						
Year 5	Coding 	Coding 	Digital 	E-Safety 	Word Processing 	Creating and Publishing 
	Word Processing 	Word Processing 	Powerpoint 	Internet 	Excel 	Creating and Publishing 
Concept Focus	Computer Science & Information Technology		Information Technology	E-safety & Information technology	Information Technology	Information Technology
Year 6						
Year 6	Coding 	Coding 	Word Processing 	E-Safety 	Creating and Publishing 	Creating and Publishing 
	Word Processing 	Word Processing 	Powerpoint 	Internet 	Excel 	Creating and Publishing 
Concept focus	Computer Science & Information Technology		Information Technology	E-safety & Information technology	Information Technology	

Core Concepts

CONCEPT – Information Technology

- Can understand and apply IT skills which enable them to effectively use computers for a variety of functions
- Can use a range of techniques and programs to create content for different audiences and purposes.

CONCEPT – Computer Science

- Can understand and apply the fundamental principles and concepts of computer programming, including abstraction, logic, sequencing, algorithms and data representation
- Can solve problems through creating and manipulating instructions for computers to follow

CONCEPT – E-safety

- Are competent and confident in using computer technology both creatively and for a specified purpose
- Are able to identify and avoid risks in order to use communication technology safely, responsibly and effectively

Progression of skills

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Information technology – Using the Internet	<p>Log on to the computer</p> <p>Open an internet browser and search using an internet search engine.</p> <p>Use hyperlinks to navigate to specific websites</p>	<p>Open an internet browser and navigate to a search engine.</p> <p>Conduct a web search to find a specified internet site.</p>	<p>Open an internet browser and navigate to a search engine.</p> <p>Conduct a web search to find information on a specified topic.</p>	<p>Open an internet browser and navigate to a search engine.</p> <p>Conduct a web search to find information on a specified topic.</p> <p>Save and open documents from the school network.</p>	<p>Open an internet browser and navigate to a web address.</p> <p>Add web addresses to favourites/bookmarks.</p> <p>Use a hyperlink and understand what it does.</p>	<p>Apply previously acquired skills to research and present information.</p>
Information technology – Word Processing	<p>Use space, backspace and enter keys.</p> <p>Use the computer mouse to click and select items.</p> <p>Launch a word document</p> <p>Type a sentence using the keyboard ensuring the correct spacing between words and appropriate punctuation.</p> <p>Use the shift key to produce a capital letter</p>	<p>Save and open documents.</p> <p>Use word art to enhance presentation</p> <p>Use the mouse or arrow keys to insert or edit text.</p> <p>Print documents</p> <p>format text</p> <p>insert clip art and images</p>	<p>Edit text and its features.</p> <p>Create a heading.</p> <p>Retrieve saved documents.</p> <p>Use copy and paste.</p> <p>Insert and position pictures.</p> <p>Use a range of appropriate punctuation (e.g. speech marks, commas etc.) -insert tables</p> <p>format text including font and paragraph justification.</p>	<p>Improve the presentation and layout of documents.</p> <p>Use a spellchecker.</p> <p>Use a range of techniques for copying and pasting text and images including the use of snipping tool, and keyboard shortcuts</p> <p>Insert and format text boxes.</p>	<p>Use Publisher.</p> <p>Identify the similarities and differences between Word and Publisher.</p> <p>Edit page layout, text, text boxes, headings and images in publisher.</p> <p>Select and use a range of templates for labels and documents in publisher choosing the most appropriate for purpose.</p>	<p>Apply previously acquired skills.</p> <p>Choose appropriate formats to present information.</p> <p>Create a presentation for a specific audience.</p> <p>Use menu tools available in word and publisher to enhance presentation of documents e.g. page colours, borders, paragraph spacing, page numbering, smartart</p>

	Change the font size, type and colour Save a document		Alter page orientation			
Information technology – PowerPoint	Add text to a single slide Save a document	Add an image (including Insert clip art/copy paste an image) Save and retrieve a document	Create multiple slides as part of a slideshow -	Add animation to slides - understand and use transitions	Use text, graphics, animations, sound. Insert a hyperlink.	Varying layout, design and presentation style to fit a particular audience or subject. Understand & use slideshow tab including timings -use appropriately for presenting:
Information Technology– Excel	Enter simple data -to produce a shopping list. Use auto sum to find a total. Save a document.	Enter simply data - produce a chart – save and retrieve a document	Understand cells, rows and columns -enter a range of data -produce a range of graphs and chart appropriate to the data/task	Use cell formatting (including font, border & fill)	Use simple formula (including SUM, Average) -understand and use conditional formatting -sort and filter data for a given purpose -use cell formatting (including number, alignment, font, border and fill)	Use spreadsheets to present information. Manipulate the data to extract information needed. Explore how to organise data for purpose. Creating new, calculated, data automatically using basic formulas.
Information technology- Microsoft 365 outlook	Contribute ideas to class and group emails. Log on to own email account to read an email	Send an email to a known member of school community. - open and reply to an email from a known person.	Create and send appropriate replies. - forward an e-mail. -save an e-mail in draft format and then return and edit prior to sending -	Open and save attachments to an appropriate place. - select an email recipient from a class address book	Create group or distribution lists of contacts from an address book Add email addresses to a class address book	Learn how to use the cc and bcc facilities when sending an e-mail and discuss when these should be used. -send 'group' e-mails and be aware of the benefits and risks in 'replying to all'.
Information technology – Creating and Publishing	Create work using Year 1 Information Technology skills.	Create work using Year 2 Information Technology skills.	Create individual work using the Information Technology skills taught in Year 3.	Create individual work using the Information Technology skills taught in Year 4.	Create individual work using the Information Technology skills taught in Year 5.	Apply Information Technology skills acquired through

		Publish work to a class Seesaw account.	Publish and edit work on class Seesaw accounts. Create and upload videos and voice recordings. Comment appropriately upon their own and others' work.	Publish and edit work on class Seesaw accounts. Create and upload a video using green screen technology.	Publish and edit work on class Seesaw accounts. Create and upload a video using varied visual effects including green screen technology. Create a Powerpoint presentation using text, graphics, animations, sound.	primary school to create individual work. Choose appropriate formats to present information. Create a presentation through a format for a specific audience. Consider layout and design of the format.
Digital photographs, video and animation	Use a range of digital devices to capture and save both still and moving images. With support, create a series of still images that can be used to create a short animation.	Upload images or movies from cameras and other digital devices to a computer -begin to make changes to images (e.g. using Paint) -create a sequence of images to form a short animation. Animate a set of still images to create a short film clip/moving picture	Discuss and evaluate the quality of captured images and make decisions whether to keep, delete or change them. Upload images and movies from digital cameras and other devices to a computer and save in a relevant location. -resize images (pixels, resolution, aspect ratio and dimensions). –	Use software to change images according to purpose. -import music, stills or video into video editing software for a specific project. - arrange, trim and cut clips to create a short film that conveys meaning. -add simple titles, credits and special effects (e.g. transitions) - create a short animated sequence which communicates a specific idea. -	Plan and create a short animated sequence to communicate a specific idea, using a storyboard and timeline. Make use of transitions and special effects in video editing software, understanding the effect they have on the audience.	Export images and movies in formats appropriate for the purpose and use them in multimedia presentations.
Computer Science - Coding	Use a sequence of instructions to create an algorithm. Give instructions for directions and movement Debug errors in code. Simplify code by using loops.	Use a sequence of instructions to create an algorithm. Create programs featuring multiple sets of instructions. Give instructions for directions and movement	Create programs featuring multiple algorithms. Create variables in code through 'if' statements. Debug errors in code. Simplify code by using loops.	Create programs featuring multiple algorithms. Create variables in code through 'if' statements. Debug errors in code. Simplify code by using loops and loops 'until'.	Create variables in code through coded functions. Debug errors in code. Simplify code by using loops. Incorporate design through sprites.	Create variables in code through varying behaviours. Debug errors in code. Simplify code by using loops, loops 'until' and nested loops. Incorporate design through sprites.

		Debug errors in code. Simplify code by using loops.	Use measurement with degrees and pixels. Incorporate design through stickers.	Understand the role of binary code in computer programming.	Consider purpose of programs when creating algorithms.	
E-Safety			Please see the Welton St Mary's E-Safety curriculum for a detailed breakdown of the progression of content.			

Assessment

CONCEPT – Information Technology

- Can understand and apply IT skills which enable them to effectively use computers for a variety of functions
- Can use a range of techniques and programs to create content for different audiences and purposes.

	By the End of Y2	By the end of Y4	By the end of Y6
Expected	<p>Open an internet browser and navigate to a web address.</p> <p>Conduct a web search to find a specified internet site.</p> <p>Use hyperlinks to navigate to specific websites</p> <p>Save and open documents.</p> <p>Use punctuation on a computer.</p> <p>Use the mouse or arrow keys to insert or edit text.</p> <p>Print documents with support.</p> <p>Use space, backspace and enter keys.</p> <p>Change the font size, type and colour</p> <p>Insert clip art and images</p> <p>Add text and images to a powerpoint slide</p> <p>Enter simple data into a spreadsheet</p> <p>Find the total using autosum</p> <p>Compose, reply and send an email</p> <p>Capture, save and upload photographs and images to a computer.</p> <p>Animate a set of still images to produce a moving picture</p>	<p>Conduct a web search to find information on a specified topic.</p> <p>Save and open documents from the school network.</p> <p>Improve the presentation and layout of documents.</p> <p>Use a spellchecker.</p> <p>Use a range of techniques for copying and pasting text and images</p> <p>Insert and format text boxes.</p> <p>Publish and edit work.</p> <p>Create a video using green screen technology.</p> <p>Use a range of appropriate punctuation (e.g. speech marks, commas etc.) -insert tables</p> <p>format text including font and paragraph justification.</p> <p>Alter page orientation</p> <p>Create multiple slides as part of a slideshow - add animation to slides</p> <p>Use transitions</p> <p>Produce a range of graphs and chart appropriate to the data/task</p> <p>Use cell formatting (including font, border & fill)</p> <p>Create and send appropriate email replies. -forward an e-mail. -save an e-mail in draft format and then return and edit prior to sending -</p> <p>Open and save email attachments to an appropriate place.</p> <p>Select an email recipient from a class address book</p> <p>Evaluate the quality of captured images and make decisions whether to keep, delete or change them.</p> <p>Upload images and movies from digital cameras and other devices to a computer and save in a relevant location. - resize images (pixels, resolution, aspect ratio and dimensions). -</p> <p>Use software to change images according to purpose. -</p> <p>Import music, stills or video into video editing software for a specific project.</p> <p>Arrange, trim and cut clips to create a short film that conveys meaning. -add simple titles, credits and special effects (e.g. transitions) -create a short animated sequence which communicates a specific idea.</p>	<p>Add web addresses to favourites/bookmarks.</p> <p>Use a hyperlink and understand what it does.</p> <p>Edit page layout, text, text boxes, headings and images in Publisher.</p> <p>Use text, graphics, animations, sound in a Powerpoint presentation.</p> <p>Create videos using varied visual effects.</p> <p>Create a presentation through a format for a specific audience.</p> <p>Consider layout, design and format when creating a presentation for purpose.</p> <p>Publish and edit work.</p> <p>Select and use a range of templates for labels and documents in publisher choosing the most appropriate for purpose.</p> <p>Use menu tools available in word and publisher to enhance presentation of documents e.g. page colours, borders, paragraph spacing, page numbering, smartart</p> <p>Understand & use slideshow tab including timings -use appropriately for presenting:</p> <p>Use simple formula (including SUM, Average)</p> <p>Understand and use conditional formatting -sort and filter data for a given purpose -use cell formatting (including number, alignment, font, border and fill)</p> <p>Use spreadsheets to present information.</p> <p>Manipulate the data to extract information needed.</p> <p>Explore how to organise data for purpose. Creating new, calculated, data automatically using basic formulas.</p> <p>Learn how to use the cc and bcc facilities when sending an e-mail and know when these should be used. -send 'group' e-mails and be aware of the benefits and risks in 'replying to all'.</p> <p>Create group or distribution lists of contacts from an address book</p> <p>Add email addresses to a class address book</p>

CONCEPT – Computer Science

- Can understand and apply the fundamental principles and concepts of computer programming, including abstraction, logic, sequencing, algorithms and data representation
- Can solve problems through creating and manipulating instructions for computers to follow

	By the End of Y2	By the end of Y4	By the end of Y6
Expected	Use a sequence of instructions to create an algorithm. Create programs featuring multiple sets of instructions. Give instructions for directions and movement Debug errors in code. Simplify code by using loops.	Create programs featuring multiple algorithms. Create variables in code through 'if' statements. Debug errors in code. Simplify code by using loops and loops 'until'. Use binary code, degrees and pixels. Incorporate design through stickers.	Create variables in code through varying behaviours and functions. Debug errors in code. Simplify code by using loops, loops 'until' and nested loops. Incorporate design through sprites. Code for purpose.

CONCEPT – E-safety

- Are competent and confident in using computer technology both creatively and for a specified purpose
- Are able to identify and avoid risks in order to use communication technology safely, responsibly and effectively

	By the End of Y2	By the end of Y4	By the end of Y6
Expected	Give examples of issues online that might make me feel sad, worried, or frightened. Explain what is meant by the term 'identity.' Explain how other people's identity online can be different to their identity in real life. Describe ways in which people might make themselves look different online. Give examples of how I might get help from a trusted adult or helpline if I find content that makes me feel sad, worried or frightened.	Explain how I can represent myself in different ways online and in 'real life'. Explain how and why I might change my identity depending on what I am doing online. Recognise that images and information online can be altered or adapted and the reasons for why this happens Know strategies to recognise whether something they see online is true or accurate Describe issues online that might make me and others feel sad, worried, or frightened and know how to get help.	Understand that some media and online content promote stereotypes. Describe and identify how media can shape ideas about gender. Explain why it is important to reject inappropriate messages about gender online. Explain how identity online can be copied, modified or altered. Demonstrate reasonable choices about my online identity and what I should share online.
	Self image and identity		
	Online relationships	Describe ways people who have similar likes and interests can get together online. Give examples of technology-specific forms of speech. Explain how feelings can be hurt by what is said or written online.	Describe how to have safe and fun experiences in a range of social environments. (e.g. live streaming, or gaming) Give examples of how to be respectful to others online. Recognise when and how to seek help when needed.

			Understand my responsibilities to make positive contributions when online. Explain what is meant by 'trusting someone online.'	
Online reputation	Understand what information is acceptable to share and what information is not acceptable to share online. Explain how information put online about me can last a long time.	Understand that everything shared online has a digital footprint. Describe some simple ways that help build a positive online reputation Understand that information online can be copied, created, edited and shared by others. Know who I should ask if I am not sure if I should put something online.	Explain how I am developing an online reputation which will allow other people to form an opinion of me. Describe ways that information about people online can be used by others to make judgements about an individual. Understand that online content can be designed to manipulate people's emotions and encourage them to read or share things. Judge what is appropriate to share online and how rules and laws relating to sharing online. Know how to report inappropriate online content or contact.	
Online bullying	Recognise examples of bullying behaviour and how it could look online. Understand how bullying can make someone feel. Share what it means to be caring or kind on or offline.	Identify online technologies where bullying might take place. Describe ways people can be bullied through a range of media. Recognise when someone is upset, hurt, or angry online and know how to get help for someone that is being bullied online. Explain why content I post might affect others' feelings or reputation and what I should do to avoid this. Know how report concerns both in school and at home about online bullying and how to block abusive users.	Know how to identify online bullying. Know how to capture bullying content as evidence to share with others who can help me. Explain how to report online bullying through apps or trusted adults, including helplines and support services.	
Managing online information	Use simple key words in search engines. Explain the difference between things that are imaginary, 'made up' or 'make believe' and things that are 'true' or 'real'.	Use key phrases in search engines and search for information within technologies. Make safe, reliable choices from search results. Explain the difference between a 'belief', an 'opinion' and a 'fact'. Understand how some opinions can be presented as fact. Explain why some information I find online may not be honest, accurate or legal.	Explain key concepts including; data, information, fact, opinion, belief, true, false, valid, reliable and evidence. Identify different types of media and their purposes. Assess the reliability of search results and recognise unsafe or suspicious content online. Understand the difference between mis-information and dis-information. Demonstrate the strategies I would apply to evaluating digital content and search results. Know how to identify, flag and report inappropriate content	
Health and wellbeing	Know and create rules and guidelines that can help me to stay safe.	Explain how using technology can distract me from other things and give examples of activities where it is easy to spend a lot of time engaged. Suggest strategies to help me limit this time. Evaluate whether a game is suitable to play or a website is appropriate for my age-group. Recognise what online adverts look like. Compare content shared for factual purposes and for advertising.	Identify when and why I might need to limit my technology time. Give advice to promote healthy amounts of technology use. Have strategies to self-regulate my use of technology and limit the impact of technology on my health. Describe common systems that regulate age-related content and describe their purpose. Know why people choose to communicate through social media and some of the risks and challenges of doing so.	

				Understand why some media and online content is not appropriate for children and that social media sites have age restrictions and regulations for use.
	Privacy and Security	Know online information about me could be seen by others. Explain some rules for keeping my information private. Explain what passwords are and use passwords for my accounts and devices.	Strategies for keeping my personal information private. Give reasons why I should only share information with people I choose to, and can trust. Explain that if I'm not sure or I feel pressurised, I should ask a trusted adult. Explain how apps may access my personal information. Know that organisations can use personal information to encourage people to buy things. Explain how apps request or take payment for additional content and why I should seek permission before purchasing. Describe ways to increase privacy through privacy settings.	Understand the benefits of safe internet use. Recognise images which may have been altered or faked. Know how and why images online may have been altered or faked. Know how devices store and share information Give reasons why passwords are important. Create and use strong, secure passwords and use simple strategies for keeping passwords private. Know what to do if my password is lost or stolen.
	Copyright and ownership	Know that content on the internet may belong to other people.	Understand that I have ownership of work I have created. Understand the importance of respecting work created by others and the problems of copying others' work.	Understand they should credit themselves as owner for any content they publish online. Understand that copying information and work from others is 'plagiarism'. Understand when it is ok to use work from others and how to do this.