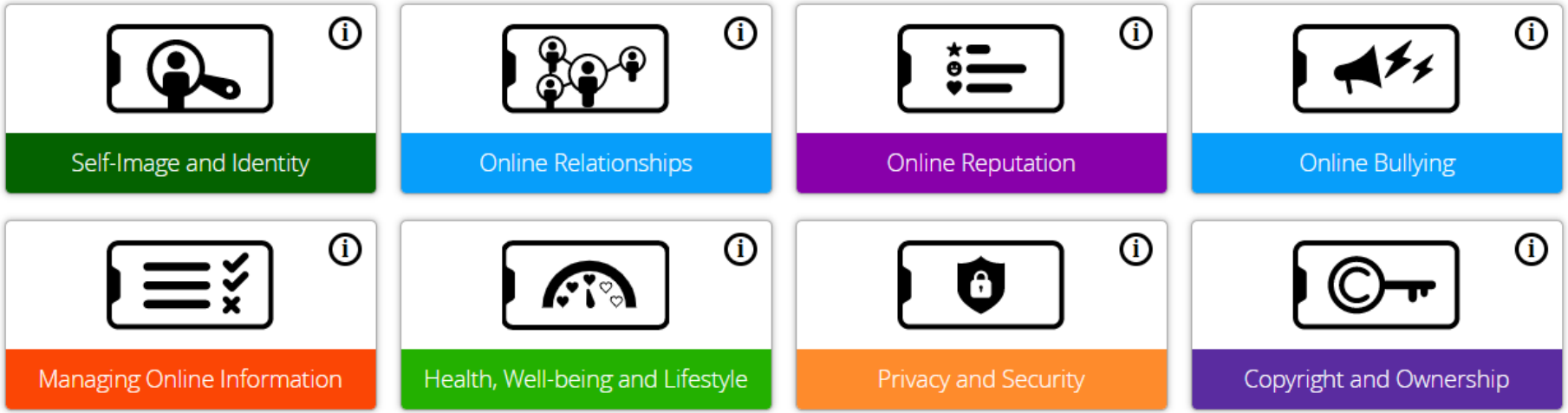
Curriculum Map: Computing

Intent Statement

At St Nicholas Catholic Primary School, it is our intent to deliver a broad and balanced computing curriculum that is ambitious, challenging and engaging. We aim to prepare our learners, including those who are disadvantaged and pupils with SEND, for future learning and employment by giving them the opportunities to cumulatively gain knowledge and develop skills that will equip them for an ever-changing digital world. Knowledge and understanding of Computing is of increasing importance for children's future both at home and for employment. Our Computing curriculum focuses on a progression of skills in digital literacy, computer science, information technology and online safety to ensure that children become competent in safely using, as well as understanding, technology. These strands are revisited repeatedly through a range of themes during children's time in school to ensure the learning is embedded and skills are successfully developed. Our intention is that Computing supports children's creativity and cross curricular learning to engage children and enrich their experiences in school.

Implementation

At St Nicholas Catholic Primary School, we develop our learner's knowledge and skills through the Teach Computing Scheme (shown below) and use Project Evolve to develop children's understanding of how to keep safe online. Keeping safe online is crucial part of our curriculum and covers the following aims:



Overview of Unit of Teach Computing Scheme and supplementary e-safety resources from Project Evolve.

	Spring 1	Spring 2	Summer 1	Summer 2	Autumn 1	Autumn 2
Reception *Digital Literacy E-Safety*	*Self- image and Identity*	*Online relationships, reputation and bullying*	*Managing online information*	*Health, well-being and lifestyle*	*Privacy and security*	*Copyright and ownership*
Teach Computing Year 1	Computing systems and networks- Technology	Creating media- Digital painting	Creating media- Digital writing	Data and information- Grouping data	Programming A- Moving a robot	Programming B- Introduction to animation
Digital Literacy E-Safety	*Self- image and Identity*	*Online relationships, reputation and bullying*	*Managing online information*	*Health, well-being and lifestyle*	*Privacy and security*	*Copyright and ownership*
Year 2	Computing systems and networks- IT around us	Creating media- Digit photography	Creating media- Making music	Data and information- Pictograms	Programming A- Robot algorithms	Programming B- An introduction to quizzes
Digital Literacy E-Safety	*Self-image and Identity*	*Online relationships, reputation and bullying*	*Managing online information*	*Health, well-being and lifestyle*	*Privacy and security*	*Copyright and ownership*
Year 3	Computing systems and networks- Connecting computers	Creating media- Animation	Creating media- Desktop publishing	Data and information- Branching databases	Programming A- Sequence in music	Programming B- Events and actions
Digital Literacy E-Safety	*Self-image and Identity*	*Online relationships, reputation and bullying*	*Managing online information*	*Health, well-being and lifestyle*	*Privacy and security*	*Copyright and ownership*

Year 4	Computing systems and networks- The internet	Creating media- Audio editing	Creating media- Photo editing	Data and information- Data Logging	Programming A- Repetition shapes	Programming B- Repetition in games
Digital Literacy E-Safety	*Self-image and Identity*	*Online relationships, reputation and bullying*	*Managing online information*	*Health, well-being and lifestyle*	*Privacy and security*	*Copyright and ownership*
Year 5	Computing systems and networks- Sharing information	Creating media- Vector drawing	Creating media- Video editing	Data and information- Fact-file databases	Programming A- Selection in physical computing	Programming B- Selection in quizzes
Digital Literacy E-Safety	*Self-image and Identity*	*Online relationships, reputation and bullying*	*Managing online information*	*Health, well-being and lifestyle*	*Privacy and security*	*Copyright and ownership*
Year 6	Computing systems and networks- Communication	Creating media- 3D modelling	Creating media- Web page creation	Data and information- Spreadsheets	Programming A- Variable in games	Programming B- Sensing
Digital Literacy E-Safety	*Self-image and Identity*	*Online relationships, reputation and bullying*	*Managing online information*	*Health, well-being and lifestyle*	*Privacy and security*	*Copyright and ownership*

Reception

In the EYFS computing is not taught as a stand-alone subject as just like pens and pencils it should just form part of the overall education in EYFS. Using cameras, Sound/ voice recorders, ipads, computers and programs on the IWB should encourage children to be aware that technology is part of the world they live in. Screen-based technology is used in more active, creative, and collaborative ways that encourage communication. Children work together to tell a story or recount an event using the interactive whiteboard software or an ipad. These tools allow children to combine text, sounds and images in their own ways to express their ideas. Cameras can allow children to create an image of a moment and to express an idea long before they can read or write. Sound recording devices are used to capture ideas or concepts.

Progression of skills- Key Stage 1

Programming		
National Curriculum	Year 1	Year 2
Understand what algorithms are; how they are implemented as programs on digital devices; and that programs execute by following precise and unambiguous instructions	• I can follow an instruction • Recognise that the order of instructions in an algorithm is important • Combine four direction commands to make sequences • Control a floor robot • Create algorithms for sprites	• Recognise the importance of giving clear instructions • Use an algorithm to program a sequence on a floor robot • Plan algorithms for different parts of a task • Identify that a program needs to be started
Create and debug simple programs	• Debug my program • Plan a simple program • Use commands to move a sprite • Use a **Start** block in a program • Explain that each sprite has its own instructions • Add programming blocks based on my algorithm • Test the programs I have created	• Create an algorithm to meet my goal • Test and debug each part of the program • Decide which blocks to use to meet the design • Build the sequences of blocks I need • Create a program based my own design • Compare my project to my design • Debug my program
Use logical reasoning to predict the behaviour of simple programs	• Explain what my program should do • Predict the outcome of a command on a device • Predict the outcome of a sequence involving forwards and backwards commands • Predict the outcome of a sequence involving up to four commands	• Explain what my algorithm should achieve • Predict the outcome of a sequence • Compare my prediction to the program outcome • Predict the outcome of a sequence of commands • Work out the actions of a sprite in an algorithm
Computer user		
National Curriculum	Year 1	Year 2
Recognise common uses of information technology beyond school	• Identify technology • Explain technology as something that helps us • Identify a computer and its main parts (screen, mouse, keyboard) • Use a mouse in different ways • Use a keyboard to type on a computer	• Recognise the uses and features of information technology • Identify that a computer is a part of IT • Identify the uses of information technology in the school • Talk about uses of information technology beyond school e.g. in a shop

	• Save and open my work	
Handling Data		
National Curriculum	Year 1	Year 2
Use technology purposefully to create, organise, store, manipulate and retrieve digital content	• Label objects • Identify that objects can be counted • Describe properties • Count and group objects	• Recognise that objects can be represented as pictures • Create a pictogram • Select objects by attribute • Explain that we can present information using a computer
E-Safety		
National Curriculum – **To 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.** This is covered in Project Evolve Scheme.		

Progression of Skills- Key Stage 2

Programming				
National Curriculum	Year 3	Year 4	Year 5	Year 6
Design, write and debug programs that accomplish specific goals, including controlling or simulating physical systems	• Successfully modify a program • Create a sequence of commands using a block language to produce a given outcome • Use an event block to start a program • Debug errors to accomplish specific goal	• Plan a program using a block language which includes repetition • Debug errors in increasingly complex programs to accomplish specific goals • Evaluate the effectiveness of a program	• Plan a program which includes selection to produce a given outcome • Debug errors in increasingly complex programs to accomplish specific goals • Evaluate the effectiveness of a program and ways it could be improved	• Plan a program which includes variable to produce a given outcome • Test programs on an emulator • Use a range of approaches to debug errors in increasingly complex programs to accomplish specific goals

Use sequence, selection, and repetition in programs; work with variables and various forms of input and output Use logical reasoning to explain how simple algorithms work to detect and correct errors in algorithms and programs.	• Explain the order (sequence) of commands can affect the outcome (same commands, different order -> same or different outcome) • Identify different sequences can achieve the same outcome	• Identify patterns (repetition) in a sequence • Understand repetition in programming is also called looping • Identify a loop in a program • Understand, identify and justify when to use 'infinite' or 'count - controlled' loops • Explain the importance in instruction order in a loop	• Define that conditional statements (selection) are used in computer programs • Program a microcontroller to control lights and a motor • Explain a loop can stop when a condition is met (number of times or event) • Explain a that program flow can branch according to a condition • Use a condition in an if…then… statement to produce a given outcome	• Define 'variable' as something that is changeable • Explain that a variable has a name and a value • Identify a variable in an existing program • Use a variable in a conditional statement to control the flow of a program • Program a microcontroller with selection and variables
Solve problems by decomposing them into smaller parts	• Work with others to decompose a problem into smaller steps in planning a project	• Independently decompose a problem into smaller steps in planning a project	• Plan a solution to a problem using decomposition	• Solve problems using decomposition, tackling each part separately
Computer user				
National Curriculum	Year 3	Year 4	Year 5	Year 6
Understand computer networks including the internet; how they can provide multiple services, such as the world wide web; and the opportunities they offer for	• Explain how digital devices function (input, output, process) • Identify input and output devices	• Describe how networks physically connect to other networks • Describe the internet as a network or networks	• Explain that computers can be connected together to form systems • Describe a computer system	• Describe different ways people communicate online • Choose a method of communication

communication and collaboration	• Explain how a computer network can be used to share information • Recognise the physical components of a network (switch, sever, wireless access point)	• Describe how the world wide is part of the internet • Describe how content can be added and accessed on the World Wide Web • Recognise how the content of the WWW is created and shared by people	• Recognise the role of computer systems in our lives • Recognise how information is transferred over the internet using packets • Explain how sharing information online lets people in different places work together • Contribute to a shared project online • Evaluate different ways of working together online	to suit a particular purpose
Use search technologies effectively, appreciate how results are selected and ranked, and be discerning in evaluating digital content	• Search for information in a single site • Understand that search engines select pages according to keywords found in the content	• Use a standard search engine to find information • Understand that search engines rank pages according to relevance.	• Use filters to make more effective use of a standard search engine • Understand that search engines use a cached copy of the crawled web to select and rank results	• Use of a range of search engines appropriate to finding information that is required • Understand that search engines rank pages based on the number and quality of inbound links

Creating Media					
National Curriculum	Year 3		Year 4	Year 5	Year 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	TEXT	• Identify the advantages and disadvantages of using text and images • Change font style, size and colour for a given purpose • purposes • Define the term 'page orientation'	• Consider how different layouts can suit different • Recognise a document can be formatted with placeholders • Identify the use of desktop publishing in the real world	• Type with increased confidence and speed using age appropriate punctuation • Use cross-curricular opportunities to consolidate previous learning from Year 1 – Year 3	• Recognise components of a webpage layout • Create a webpage including text, images, hyperlinks and embedded content • Understand the need for a navigation path
	Images	• Change orientation of images	• Use a computer to (further) manipulate images • Change the composition of an image • Recognise images can be changed for different purposes • Describe positive and negative effects that retouching can have on an image • Use the most appropriate tool for a particular purpose	• Recognise vector drawings are made using shapes • Add, remove, modify and combine objects to create graphical drawing on a computer • Change the order of layers in a vector drawing • Group object to create a single object • Edit and refine work	• Create 3D graphical objects on a computer • Rotate and re-position a 3D space • Modify multiple 3D objects • Combine 3D objects to create desired effect • Apply blank 3D objects as placeholders to create holes
	Multime	• Understand how animation works • Plan an animation • Use onion skinning to create small	• Press/tap buttons to start and stop recordings • Recognise recorded audio is stored as a file	• Identify the features of a good video • Plan a video production using a story board	• Use cross - curricular opportunities to consolidate previous learning

	di a	changes between frames ● Review and improve an animation ● Add and evaluate the impact of adding other media to an animation	● Edit and alter recorded audio ● Layer sounds ● Save/export an audio file ● Consider the results of editing choices made	● Use a computer to make a video ● Make edits to a video to improve the outcome ● Consider the impact of changes made on the quality of the video	from Year 1 – Year 5
E-Safety					
National Curriculum: To use technology safely, respectfully and responsibly; recognise acceptable/unacceptable behaviour; identify a range of ways to report concerns about content and contact. This is covered in Project Evolve.					